PART A

IONOSPHERIC DATA

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U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

CRPL-F157
PART A

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CONTENTS

SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1952, and continuing through December 1956, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Sixth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Geneva, 1951. Excerpts concerning symbols and terminology from Document No. 626-E of this Meeting are given on pages 2-7 of the report CRPL-F89, "Ionospheric Data," issued January 1952. Reprints of these pages are available upon request.

Beginning with data for January 1957, the symbols used are given in NBS Report 5033, "Summary of Changes in Ionospheric Vertical Soundings, Observing and Scaling Procedures - Effective 1 January 1957," which draws upon the First Report of the Special Committee on World-Wide Ionospheric Soundings (URSI/AGI), Brussels, Sept. 2, 1956. A list of these symbols is available upon request.

In the Second Report of the Special Committee on World-Wide Ionospheric Soundings of the URSI/AGI Committee, May 1957, a new descriptive letter was introduced:

M Measurement questionable because the ordinary and extraordinary components are not distinguishable.

There was an expansion in meaning of the following:

Z (1) (qualifying letter) Measurement deduced from the third magnetoionic component.
(2) (descriptive letter) Third magnetoionic component present.

Beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

The following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given above.

a. For all ionospheric characteristics:

Values missing because of A, C, F, H, L, N, R or S are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of foF2 (and foE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F (and h'E near sunrise and sunset) missing for this reason are counted usually as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count.

Values missing because of G are counted:

1. For foF2, as equal to or less than foF1.
2. For h'F2, as equal to or greater than the median.

The symbol W is included in the median count only when it replaces a height characteristic; the descriptive symbol D, only when it replaces a frequency characteristic.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because of E or G (and B when applied to the daytime E region only) are counted as equal to or less than the median foE, or equal to or less than the lower frequency limit of the recorder.

At night B for fEs is counted on the low side when there is a numerical value of foF2; otherwise it is omitted from the median count.

Values of fEs missing for any other reason, and values of h'Es missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If the count is four or less, the data are considered insufficient and no median value is computed.

2. For the F2 layer, h'F or foEs, if the count is from five to nine, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as the count is at least five, the median is not considered doubtful. A count of at least 5 is considered sufficient for an h'Es median.

3. For all layers, if more than half of the data used to compute the medians are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

Ordinarily, a blank space in the fEs or foEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of foE. Blank spaces at the beginning and end of columns of h'F2 or h'F1, foF1, h'E, and foE are usually the result of diurnal variation in these characteristics. Complete absence of medians of h'F1 and foF1 is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.

b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.

c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

d. The tables may contain median values of either foEs or fEs. The graph of median Es corresponds to the table. Percentage curves of fEs are estimated from values of foEs when necessary.

PREDICTED AND OBSERVED SUNSPOT NUMBERS

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

Month	Predicted Sunspot Number										
	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948
December		150*	150	42	11	15	33	53	86	108	114
November		150*	147	35	10	16	38	52	87	112	115
October		150*	135	31	10	17	43	52	90	114	116
September		150*	119	30	8	18	46	54	91	115	117
August		150*	105	27	8	18	49	57	96	111	123
July		150*	95	22	8	20	51	60	101	108	125
June		150*	89	18	9	21	52	63	103	108	129
May		150*	77	16	10	22	52	68	102	108	130
April		150*	68	13	10	24	52	74	101	109	133
March		150*	60	14	11	27	52	78	103	111	133
February	150*	150*	53	14	12	29	51	82	103	113	133
January	150*	150*	48	12	14	30	53	85	105	112	130

*This number is believed representative of solar activity at a maximum portion of the current sunspot cycle.

The latest available information follows concerning the corresponding observed Zürich numbers beginning with the minimum of April 1954. Final numbers are listed through June 1956.

Observed Sunspot Number

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1954				3	4	4	5	7	8	8	9	12
1955	14	16	19	23	29	35	40	46	55	64	73	81
1956	89	98	109	119	127	137	145	148	149	154	157	162
1957	169	171										

WORLD-WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 72 and figures 1 to 143 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Republica Argentina, Ministerio de Marina:
Buenos Aires, Argentina

Australian Department of Supply and Shipping, Bureau of Mineral Resources, Geology and Geophysics:
Watheroo, Western Australia

Meteorological Service of the Belgian Congo and Ruanda-Urundi:
Elisabethville, Belgian Congo
Leopoldville, Belgian Congo

British Department of Scientific and Industrial Research, Radio Research Board:
Falkland Is.
Ibadan, Nigeria (University College of Ibadan)
Port Lockroy
Slough, England

Defence Research Board, Canada:
Baker Lake, Canada
Ottawa, Canada
Winnipeg, Canada

Radio Wave Research Laboratories, National Taiwan University, Taipeh, Formosa, China:
Formosa, China

Danish National Committee of URSI:
Godhavn, Greenland

National Laboratory of Radio-Electricity (French Ionospheric Bureau):
Casablanca, Morocco
Poitiers, France

Institute for Ionospheric Research, Lindau Uber Northeim, Hannover, Germany:
Lindau/Harz, Germany

Icelandic Post and Telegraph Administration:
Reykjavik, Iceland

Indian Council of Scientific and Industrial Research, Radio Research Committee, New Delhi, India:
- Ahmedabad (Physical Research Laboratory)
- Bombay (All India Radio)
- Delhi (All India Radio)
- Kodaikanal (India Meteorological Department)
- Madras (All India Radio)
- Tiruchy (All India Radio)

Ministry of Postal Services, Radio Research Laboratories, Tokyo, Japan:
- Akita, Japan
- Tokyo (Kokubunji), Japan
- Wakkanai, Japan
- Yamagawa, Japan

Christchurch Geophysical Observatory, New Zealand Department of Scientific and Industrial Research:
- Christchurch, New Zealand
- Rarotonga, Cook Is.

Norwegian Defence Research Establishment, Kjeller per Lillestrom, Norway:
- Oslo, Norway
- Tromso, Norway

Institute of Terrestrial Magnetism, Ionosphere and Radio Propagation, Moscow, U.S.S.R.:
- Alma-Ata
- Chita
- Leningrad
- Moscow
- Simferopol
- Tomsk
- Yakutsk
- Yuzhno-Sakhalinsk

South African Council for Scientific and Industrial Research:
- Capetown, Union of South Africa
- Johannesburg, Union of South Africa
- Nairobi, Kenya (East African Meteorological Department)

Research Institute of National Defence, Stockholm, Sweden:
- Lycksele, Sweden

Royal Board of Swedish Telegraphs, Radio Department, Stockholm, Sweden:
- Lulea, Sweden

Post, Telephone and Telegraph Administration, Berne, Switzerland:
- Schwarzenburg, Switzerland

United States Army Signal Corps:
Ft. Monmouth, New Jersey
Okinawa I.
St. Johns, Newfoundland
Thule, Greenland

National Bureau of Standards (Central Radio Propagation Laboratory):
Fairbanks, Alaska (Geophysical Institute of the University of Alaska)
Huancayo, Peru (Instituto Geofisico de Huancayo)

ERRATUM

For Nurmijarvi, Finland, values of (M3000)F2 as published in Part A of CRPL-F154, 155, and 156, are incorrect.

EXAMPLES OF IONOSPHERIC VERTICAL SOUNDINGS
Reykjavik, Iceland, June 1, 1957

The following ionograms were obtained at the Reykjavik, ionosphere vertical sounding station operated by the Icelandic Post and Telegraph. They are typical of day and night conditions for June at this geomagnetic latitude (70°). Ionospheric data are scaled directly from these records onto the f-plot, a graph of frequency characteristics vs. time. The f-plot for the day represented by these soundings is found on the following page.

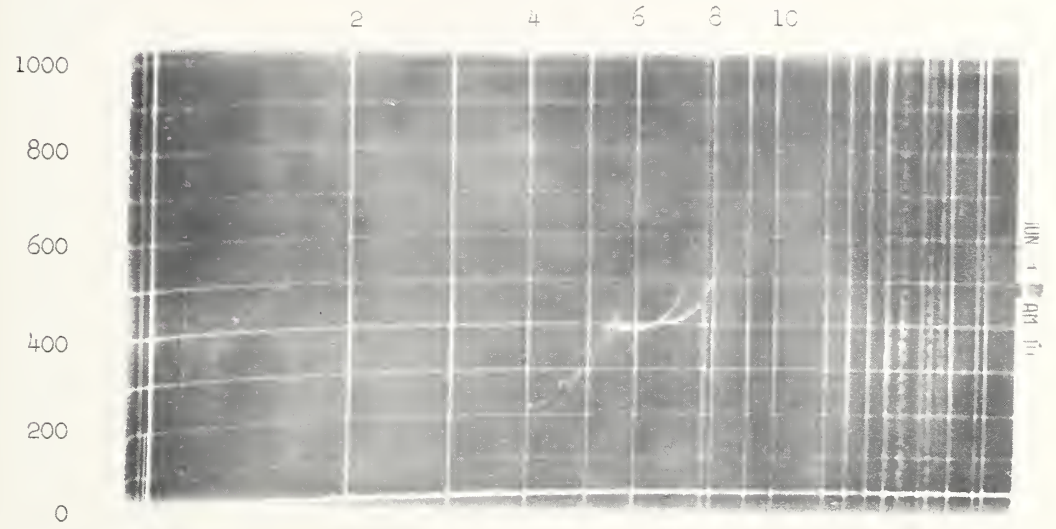


Fig. A. Reykjavik, June 1, 1957, 1001 hours, 15°W time.

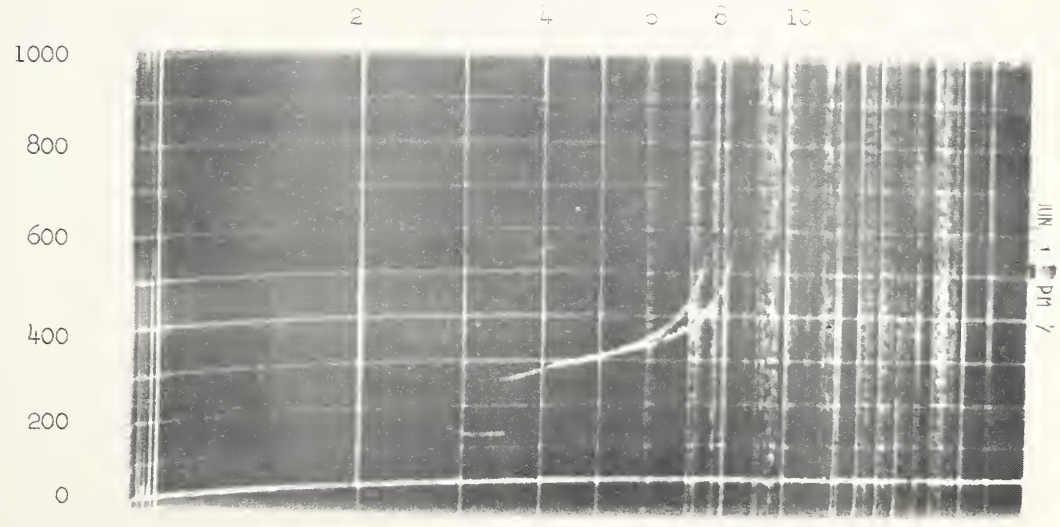
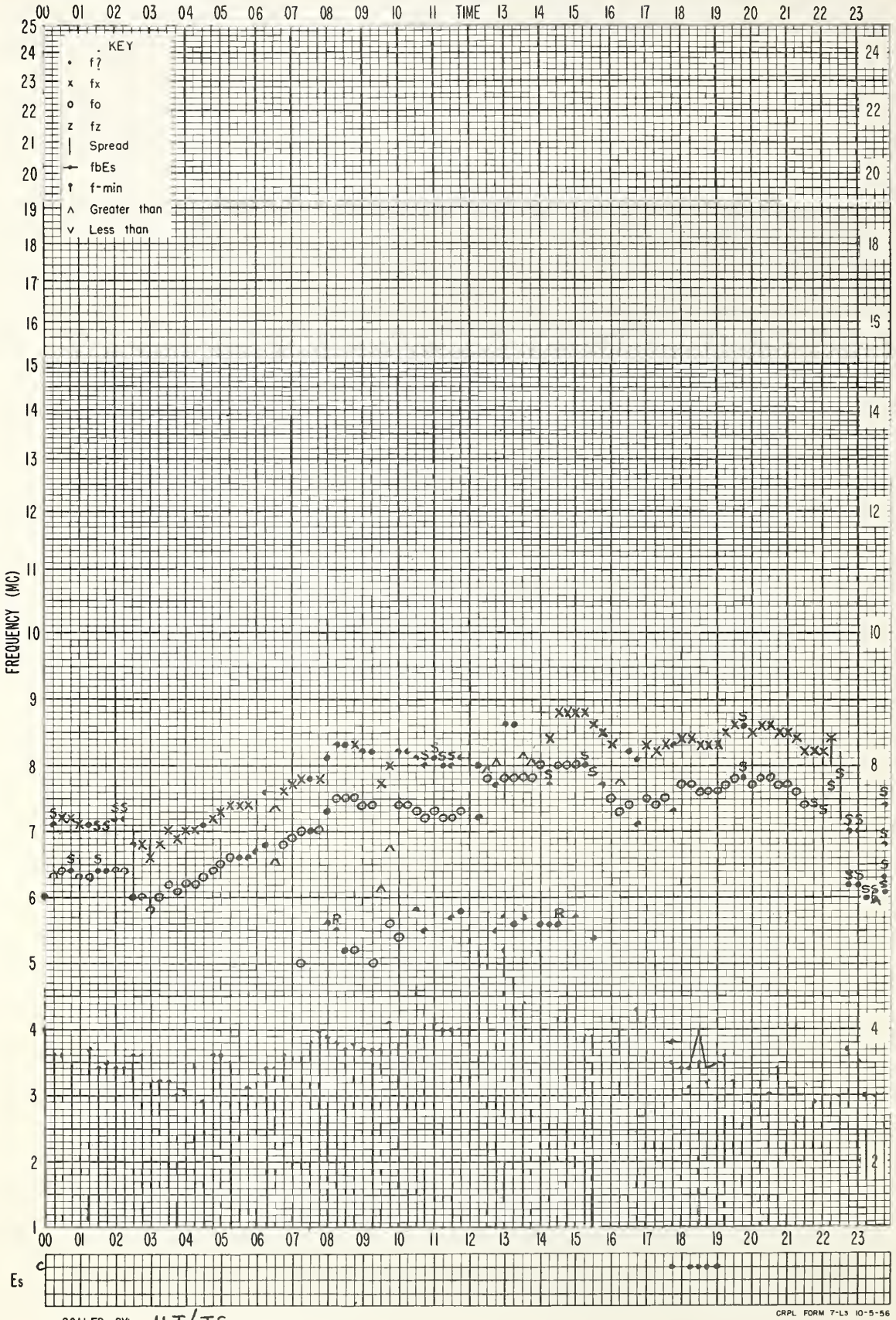


Fig. B. Reykjavik, June 1, 1957, 1901 hours, 15°W time.

REYKJAVIK, ICELAND
STATION IONRK

f-PLOT OF IONOSPHERIC DATA

DATE 1 JUNE 1957



SCALED BY HJ/JS

CRPL FORM 7-L3 10-5-56

Commerce-Standards-Boulder, Colo.

Radio Noise Data

The results of radio noise measurements are presented in the following graphs and tables. These are based on three parameters of the noise: (1) the mean power, (2) the mean envelope voltage, and (3) the mean logarithm of the envelope voltage. The mean power averaged over a period of several minutes is the basic parameter and is expressed as an effective antenna noise figure, F_a. F_a is defined as the noise power available from an equivalent lossless antenna in db above ktb (the thermal noise power available from a passive resistance) where

k = Boltzman's constant (1.38×10^{-23} joules per degree Kelvin)

t = Absolute room temperature (taken as 288° K)

b = Bandwidth in cycles per second.

The mean voltage and mean logarithm are expressed as deviations, V_d and L_d, respectively, in db below the mean power.

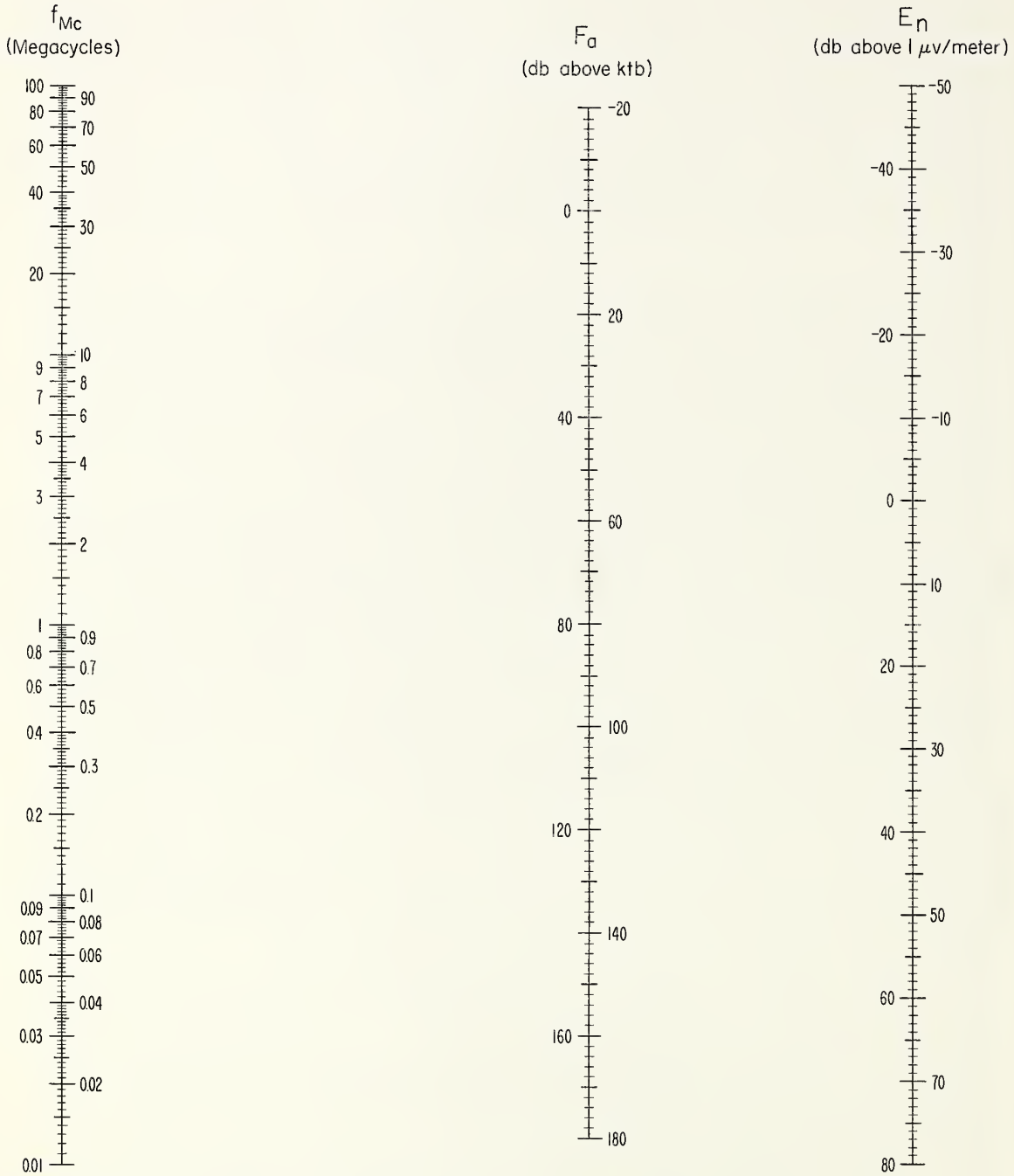
Measurements of these parameters were made with the National Bureau of Standards Radio Noise Recorder, Model ARN-2, which has an effective noise bandwidth of 280 cycles per second and uses a standard 21.75' vertical antenna. A 15-minute recording is made on each frequency each hour, and these 15-minute samples are taken as representing the noise conditions for the full hour. The month-hour medians, F_{am}, V_{dm}, and L_{dm} are determined from these hourly values for each of the corresponding parameters and the resulting medians are plotted at the half-hour point on the curves. Normally from 25 to 30 observations of the mean power are obtained monthly for each hour of the day, and from 10 to 15 observations of the voltage and logarithm deviations. When there are fewer than 15 observations of the mean power, or 7 observations of the voltage and logarithm deviations, the tabulated values are identified by an asterisk (*).

The upper and lower decile values of F_a are also reported in the following tabulation to give an indication of the extent of the variation of the noise power from day to day at a given time of day. These are expressed in db above and below the month-hour median, F_{am}, and designated by D_u and D_ℓ, respectively.

To convert F_a to an r.m.s. noise field strength, E_n, the nomogram or the equation on the following page may be used.

Information on expected worldwide noise levels and their application to systems problems is presented in NBS Circular 557 (available from the Supt. of Documents, U. S. Govt. Printing Office, Washington 25, D. C.). More recent estimates of radio noise levels are given in CCIR Report No. 65, "Report on Revision of Atmospheric Radio Noise Data", Warsaw, 1956 (available from the International Telecommunication Union, Geneva).

NOMOGRAM FOR TRANSFORMING EFFECTIVE ANTENNA NOISE FIGURE TO NOISE FIELD STRENGTH AS A FUNCTION OF FREQUENCY



$$E_n = F_a + 20 \log_{10} f_{Mc} - 65.5$$

F_a = Effective Antenna Noise Figure = External Noise Power Relative to ktb Available from an Equivalent Short, Lossless, Vertical Antenna in db Above ktb.

E_n = Equivalent Vertically Polarized Ground Wave R.M.S. Noise Field Strength in db Above 1 μv/meter for a 1 kc Bandwidth.

f_{Mc} = Frequency in Megacycles.

RADIO NOISE DATA

Station Bill, Wyoming Lat. 43.2° N Lang. 105.2° W Type Recorder ARN-2 Month July 19 57

	Local Mean Time																						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	51 kc																							
F_{am}	*143	*142	*141	*141	*137	*136	*135	*133	*132	*127	*131	*135	*139	*142	*142	*142	143	*143	143	145	145	145	145	143
D_u																	10		8	4	4	4	2	4
D_ℓ																	6		8	12	10	8	8	8
V_{dm}																								
L_{dm}																								
	113 kc																							
F_{am}	*127	*126	*126	*123	*119	*115	*113	*110	*109	*103	*111	*121	*119	*123	*124	125	125	*128	127	129	127	129	127	127
D_u																10	12		10	8	8	4	4	4
D_ℓ																12	12		12	12	6	8	8	10
V_{dm}																								
L_{dm}																								
	246 kc																							
F_{am}	*112	*110	*109	*104	*100	*98	*92	*92	*91	*84	*96	*94	*109	*113	*112	114	112	*114	112	*116	114	112	112	112
D_u																8	12		12		8	8	4	4
D_ℓ																20	22		20		10	6	8	8
V_{dm}																								
L_{dm}																								
	545 kc																							
F_{am}	*92	*90	*90	*80	*66	*68	*68	*66	*68	*68	*74	*84	*96	*92	*98	*98	*97	*96	*96	*94	*92	*90	*93	*94
D_u																								
D_ℓ																								
V_{dm}																								
L_{dm}																								
	2.5 Mc																							
F_{am}	73	74	72	72	60	42	34	24	21	*21	*26	*36	*55	*61	*58	63	61	59	57	61	69	71	71	71
D_u	4	3	7	5	7	16	14	9	10							14	15	8	17	13	4	6	6	6
D_ℓ	7	11	7	9	9	15	12	5	4							38	40	28	17	12	10	8	8	6
V_{dm}																								
L_{dm}																								
	5 Mc																							
F_{am}	66	66	64	64	58	50	42	32	26	*23	*24	*31	*40	*40	*44	47	48	52	54	60	66	66	66	66
D_u	4	4	6	4	2	4	6	10	12							13	8	4	8	2	2	4	4	4
D_ℓ	4	4	4	6	6	15	16	10	6							23	28	18	14	10	8	4	4	4
V_{dm}																								
L_{dm}																								
	10 Mc																							
F_{am}	49	48	46	45	44	45	41	37	*33	*29	*33	*30	*37	*37	39	41	41	45	47	51	53	53	51	51
D_u	6	5	7	4	5	4	6	4							8	6	6	5	4	2	2	2	4	5
D_ℓ	6	4	3	2	3	8	10	8							10	8	4	6	4	5	6	4	7	8
V_{dm}																								
L_{dm}																								
	20 Mc																							
F_{am}	27	28	27	28	27	28	28	28	*27	*26	*26	*26	*28	*27	28	28	28	30	33	31	30	28	27	28
D_u	4	3	4	3	4	6	6	5							6	6	7	6	3	3	4	4	5	5
D_ℓ	3	4	3	4	3	4	3	4							3	4	3	5	8	6	4	3	3	4
V_{dm}																								
L_{dm}																								

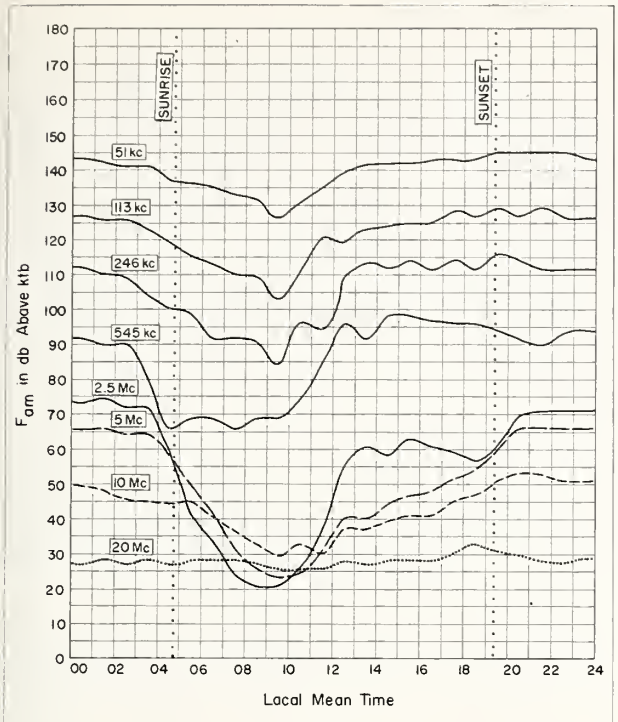
RADIO NOISE DATA

Station Boulder, Colorado Lat. 40.1° N Lang. 105.1° W Type Recorder ARN-2 Month July 19 57

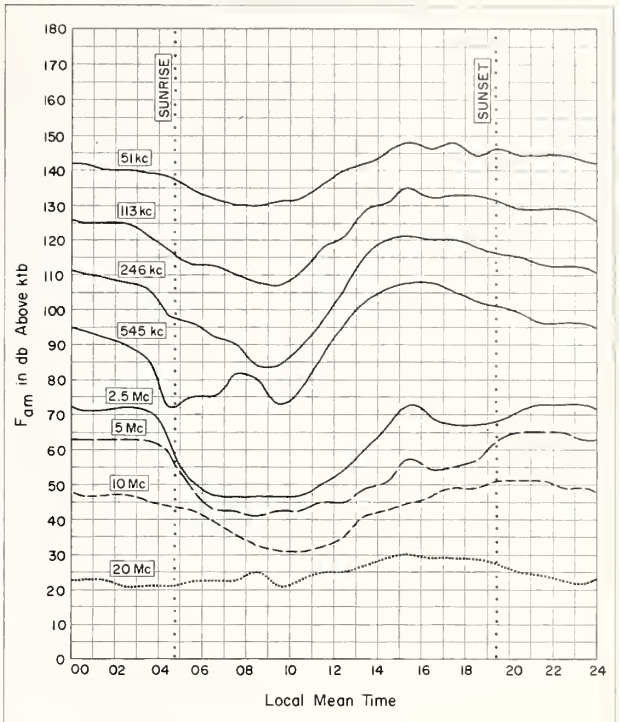
	Local Mean Time																							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	51 kc																							
F_{am}	142	140	140	139	138	134	132	130	130	131	132	136	140	142	145	148	146	148	144	146	144	144	144	142
D_u	4	4	4	3	2	4	4	4	0	6	4	4	8	8	8	6	8	4	8	3	4	4	4	3
D_ℓ	4	2	2	3	6	4	4	4	4	4	4	6	4	6	7	10	6	8	6	8	6	6	2	4
V_{dm}	6.0	6.0	6.5	7.0	9.0	8.5	9.0	10.0	11.0	11.0	12.5	9.5	10.5	9.0	9.0	8.5	8.5	8.5	8.0	8.0	7.5	7.5	7.0	7.0
L_{dm}	13.0	12.5	13.0	15.0	17.0	16.0	17.5	18.5	19.5	19.5	20.5	17.0	18.0	15.0	14.0	14.0	15.0	13.0	14.0	15.0	14.0	14.0	14.5	13.0
	113 kc																							
F_{am}	125	125	125	121	117	113	113	110	108	107	111	118	121	129	131	135	132	133	133	131	129	129	129	127
D_u	6	4	4	6	6	8	5	8	5	7	8	9	4	11	12	7	13	5	6	7	8	6	4	4
D_ℓ	5	4	5	3	5	8	9	9	9	5	7	9	10	14	16	22	11	14	12	10	9	7	8	5
V_{dm}	6.5	5.5	6.0	6.5	8.0	8.5	11.0	11.5	12.0	12.0	12.5	12.5	10.5	11.5	11.0	9.5	9.0	9.0	8.5	8.0	7.0	7.0	6.5	7.0
L_{dm}	12.5	11.5	12.0	13.0	16.5	17.5	20.5	20.5	22.0	20.0	21.0	19.5	18.0	19.0	18.0	16.5	16.0	15.0	15.0	14.5	13.0	13.0	14.0	14.0
	246 kc																							
F_{am}	110	109	108	106	98	96	92	90	84	84	89	97	106	116	120	121	120	120	118	116	115	113	113	112
D_u	6	5	6	4	6	7	6	8	10	10	20	18	17	12	10	9	8	8	8	8	7	6	5	5
D_ℓ	4	5	5	7	11	15	12	12	10	8	6	19	18	21	25	23	16	18	18	15	9	7	8	8
V_{dm}	5.0	5.0	5.0	7.0	8.0	8.0	10.0	10.0	11.5	9.5	13.0	11.5	12.5	11.5	10.0	10.0	9.0	8.0	9.0	8.0	7.0	7.0	6.5	6.5
L_{dm}	11.0	11.0	12.0	14.5	16.0	18.0	17.0	17.5	19.5	16.5	21.0	21.0	20.0	20.5	17.5	18.5	17.0	15.5	16.5	14.0	13.0	14.0	13.0	12.0
	545 kc																							
F_{am}	94	92	90	86	72	75	75	82	80	73	77	87	96	103	106	108	108	105	102	101	99	96	96	96
D_u	6	6	6	6	8	5	6	6	8	10	22	18	16	11	11	11	6	9	8	9	5	9	6	6
D_ℓ	4	5	2	18	8	3	4	9	10	3	7	15	22	27	25	26	25	28	23	16	9	6	4	5
V_{dm}	5.0	5.0	5.0	6.5	6.0	4.5	5.5	5.0	2.5*	7.0	15.0	11.0	11.0	10.0	10.0	9.0	9.0	10.5	11.0	9.0	6.0	6.0	5.0	5.0
L_{dm}	10.5	10.0	11.0	12.5	14.0	8.5	10.0	10.0	8.0*	13.0	20.5	20.0	21.0	20.5	18.5	17.5	18.0	17.0	21.5	15.0	13.0	11.5	10.5	11.0
	2.5 Mc																							
F_{am}	71	71	72	71	63	51	47	47	47	47	47	50	54	61	67	73	69	67	67	68	71	73	73	73
D_u	4	4	3	6	4	2	4	2	1	2	2	13	19	16	12	8	12	10	8	7	8	4	4	2
D_ℓ	4	6	5	7	8	4	2	4	2	2	2	3	5	8	16	22	18	17	12	7	4	5	6	4
V_{dm}	3.5	3.5*	4.0	4.0	3.0*	3.0*	2.0*	1.0*	1.0*	1.0*	1.0*	2.0	5.0	8.0	5.0	7.5	5.5	6.0	6.0	3.5	4.0	3.5	4.0	4.0
L_{dm}	8.0	8.0*	9.0	8.0*	7.5*	5.0*	4.0*	3.0*	3.0*	3.0*	3.0*	3.0	8.0	15.0	16.5	15.0	13.5	14.5	10.5	9.0	8.0	8.0	9.0	8.0
	5 Mc																							
F_{am}	63	63	63	63	59	49	43	43	41	43	43	45	45	49	51	58	54	55	57	63	65	65	65	63
D_u	2	4	2	2	2	4	4	2	4	2	5	4	4	17	16	18	14	8	6	2	4	2	2	4
D_ℓ	3	2	3	4	6	6	3	8	4	5	4	8	2	6	4	13	7	9	6	6	3	4	4	3
V_{dm}	3.5	3.5	4.0	4.0	4.0*	4.5*	4.0*	1.5*	1.5*	1.0*	1.0*	1.0	3.0	9.0	6.0	7.5	5.0	4.0	3.0	2.5	3.0	3.5	4.0	4.0
L_{dm}	8.0	8.0	8.0	8.5	8.5*	8.0*	7.0*	3.5*	3.5*	3.0*	3.0*	3.0	5.0	14.0	14.0	15.5	8.0	9.0	6.0	6.0	7.0	7.5	8.0	8.0
	10 Mc																							
F_{am}	47	47	47	45	44	43	39	35	33	31	31	33	35	41	43	45	47	49	49	51	51	51	49	49
D_u	4	2	2	1	3	2	6	6	6	6	5	6	10	9	9	8	5	3	4	4	5	2	4	2
D_ℓ	4	3	4	3	3	4	4	5	4	5	6	7	6	8	11	7	5	6	2	3	3	4	3	6
V_{dm}	4.0	3.0	2.5	2.5	3.0*	3.0*	4.5*	4.0*	4.5*	4.0*	3.0*	4.5	4.5	5.0	5.0	4.5	3.0	3.0	3.0	2.5	3.0	3.5	3.5	3.0
L_{dm}	7.5	7.0	6.5	6.0	7.0*	7.5*	7.0*	8.0*	11.5**	6.0*	6.0*	8.0	9.0	10.0	10.0	10.0	6.5	6.5	7.0	6.0	6.5	6.0	7.5	7.0
	20 Mc																							
F_{am}	23	23	21	21	21	23	23	23	25	21	23	25	25	27	29	30	29	29	29	27	25	24	23	22
D_u	1	0	2	1	2	3	3	4	4	6	12	7	6	7	10	16	7	4	4	7	10	4	3	3
D_ℓ	2	2	0	0	0	2	2	2	4	2	2	4	4	6	8	7	7	6	4	4	3	3	2	1
V_{dm}	1.0*	1.0*	.5	.5*	1.0*	2.0*	3.0*	2.0*	3.0*	3.0*	2.5	2.5	2.0	2.0	3.0	4.0	3.0	3.0	3.0	2.5	1.0*	1.0*	1.5*	1.5*
L_{dm}	3.0*	3.0*	3.0	2.5*	2.5*	3.5*	5.0*	4.0*	7.0*	4.5*	4.0	5.0	5.0	5.0	6.0	7.5	6.0	6.0	5.0	4.5	4.5*	3.0*	4.0*	3.0*

GPO 845918

GRAPHS OF RADIO NOISE DATA



BILL, WYOMING JULY 1957



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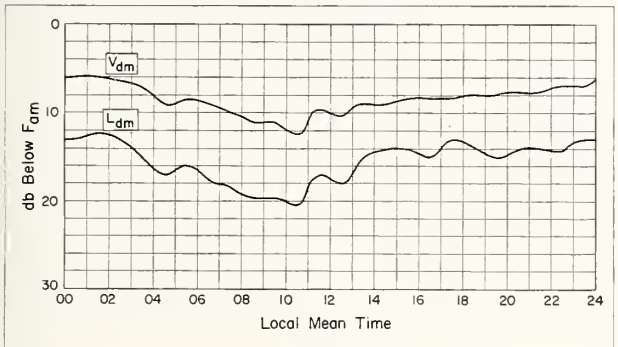

51 kc

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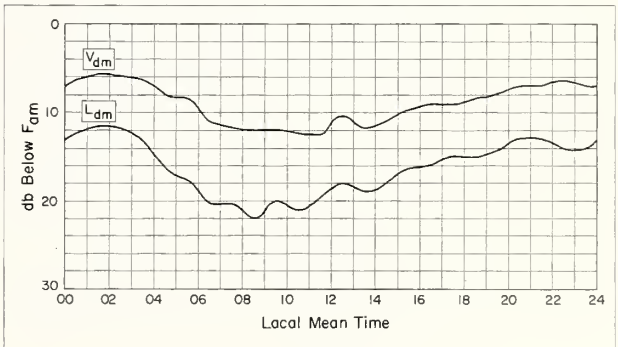

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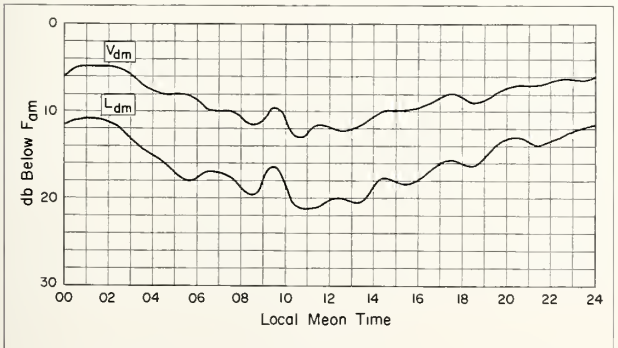

246 kc

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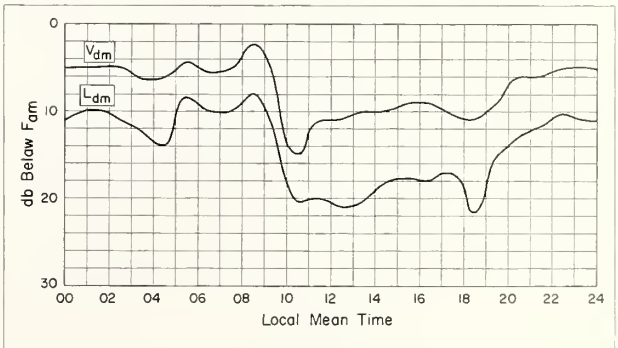

545 kc

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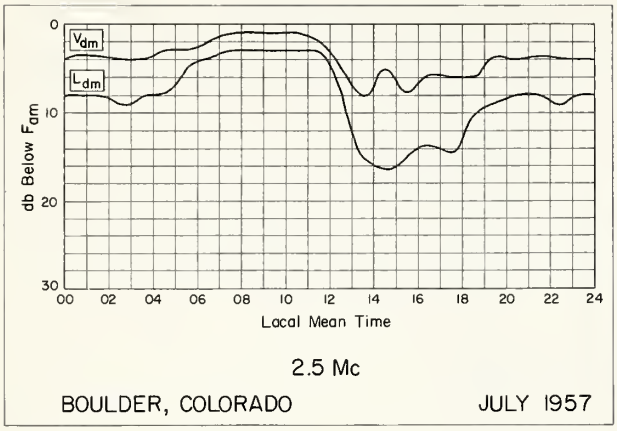
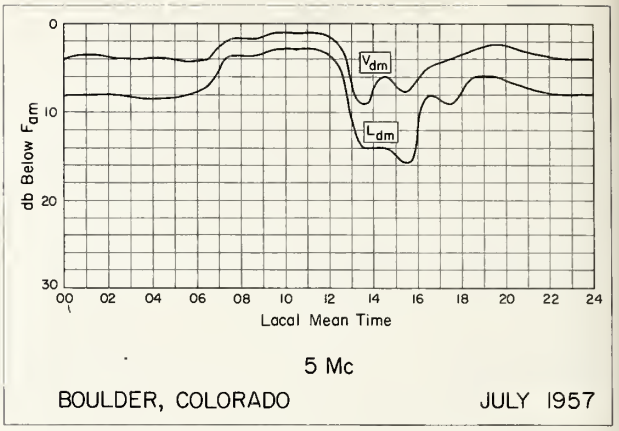


2.5 Mc

BOULDER, COLORADO JULY 1957



5 Mc

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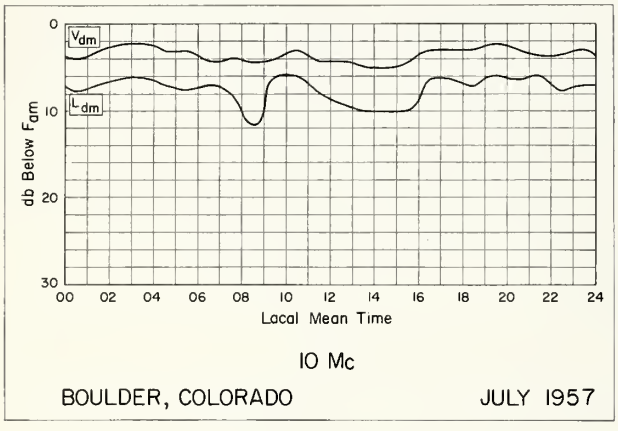

10 Mc

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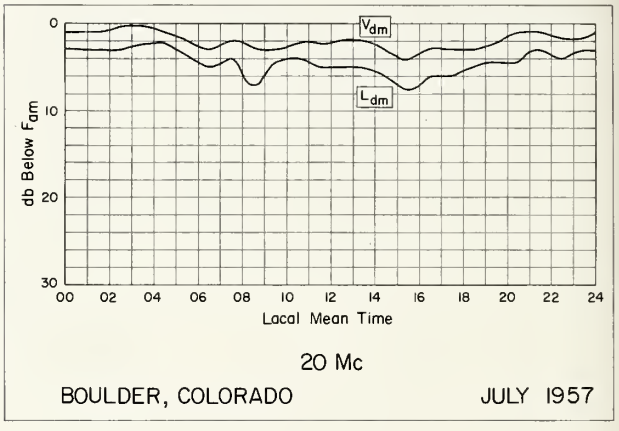


20 Mc

BOULDER, COLORADO JULY 1957

Table 1

Formosa, China (25.0°N, 121.5°E) July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		13.7	280				2.6	2.70
01		13.3	260				3.4	2.90
02		11.4	240				2.5	2.90
03		9.2	240				4.0	2.85
04		7.8	250				4.2	2.75
05		7.9	260				3.4	2.85
06		8.5	240			(2.4)	3.0	3.00
07		9.2	230			(3.1)	4.0	3.00
08		9.3	220	---		3.7	5.3	2.85
09	---	9.6	220	(6.6)		4.0	5.6	2.60
10	(420)	10.7	210	(6.6)		(4.4)	5.8	2.40
11	390	11.6	220	(6.4)		---	5.6	2.45
12	390	12.4	210	6.3		---	<5.8	2.55
13	400	12.8	220	6.3		---	5.8	2.55
14	400	13.3	220	6.2		---	5.2	2.55
15	380	13.7	220	(6.1)		---	5.0	2.65
16	360	13.8	220	5.8		3.8	5.2	2.65
17	(320)	13.8	240	---		3.3	4.4	2.65
18		13.3	250			---	4.2	2.65
19		12.9	280				3.7	2.60
20		12.2	300				3.7	2.50
21		13.2	320				2.9	2.40
22		14.1	320				2.6	2.50
23		14.3	300				2.7	2.55

Time: 120.0°E.
Sweep: 1.1 Mc to 19.5 Mc in 15 minutes, manual operation.

Table 2

Fairbanks, Alaska (64.9°N, 147.8°W) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.0)	310				3.8	(2.70)
01	---	(6.0)	(320)				3.8	(2.60)
02	---	(5.7)	<330				4.2	(2.60)
03	---	(5.6)	<310	---	---	----	4.4	(2.60)
04	(450)	(5.6)	(265)	(4.0)	---	----	4.2	(2.55)
05	450	(6.0)	260	(4.2)	111	(2.80)	4.5	(2.45)
06	470	(6.2)	230	(4.5)	103	(3.10)	3.5	(2.45)
07	450	6.2	220	4.8	103	3.40		2.50
00	480	6.4	225	(4.8)	101	3.50		2.50
09	515	6.4	215	(5.0)	101	(3.60)		2.45
10	480	6.6	220	(5.0)	101	(3.70)	3.9	2.50
11	505	6.2	220	(5.2)	101	3.70		2.45
12	530	6.4	215	(5.2)	103	3.80	3.7	2.40
13	520	6.4	220	(5.2)	101	(3.70)		2.40
14	515	6.4	220	(5.2)	102	(3.60)		2.45
15	520	6.2	225	(5.0)	103	(3.50)		2.45
16	515	6.2	230	(5.0)	103	----		2.45
17	480	6.2	230	(4.8)	109	(3.30)		2.55
18	430	(6.4)	240	(4.8)	111	(3.00)		(2.65)
19	(430)	(6.2)	(255)	---	119	2.60		(2.70)
20	---	(6.2)	270		121	(2.50)		(2.80)
21	---	(6.2)	295		---	----	2.9	(2.80)
22	---	(6.1)	290		---	----	3.0	(2.80)
23		(5.9)	305		---	----	3.0	(2.00)

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 3

Reykjavik, Iceland (64.1°N, 21.8°W) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.0)					3.2	(2.60)
01		(4.6)					3.2	(2.40)
02		(5.8)			---	----	3.7	(2.50)
03		(5.2)		---	---	----	3.9	(2.55)
04		5.6		---	---	----	3.3	2.55
05		6.0		---	---	----	2.8	2.55
06		6.0		4.4	---	----		2.55
07		5.9		4.7	---	----		2.55
00		6.4		5.0	---	(3.50)		2.60
09		6.7		5.2	---	----		2.50
10		6.5		(5.4)	---	----		2.50
11		6.8		5.4	---	----		2.55
12		6.8		5.6	---	----		2.50
13		6.8		5.5	---	----		2.55
14		6.7		5.5	103	----		2.50
15		6.6		5.4	---	----		2.55
16		6.0		5.3	---	----		2.60
17		6.7		(5.0)	109	----		2.60
18		6.7		(4.9)	107	----		2.65
19		6.3		4.5	131	(3.60)		2.60
20		6.2		---	---	----		2.60
21		(5.7)		---	---	----	2.8	(2.60)
22		(5.3)			---	----		(2.50)
23		(5.4)			---	----		(2.55)

Time: 15.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 4

St. Johns, Newfoundland (47.6°N, 52.7°W) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(6.6)	300				2.4	(2.55)
01		6.2	300				1.3	2.60
02		5.2	300					2.60
03		4.6	310		---	----		2.60
04		5.0	280		115	2.00		2.70
05	---	5.4	250	---	109	2.70	2.8	2.75
06	(400)	6.0	240	4.6	109	3.00	3.4	2.80
07	425	6.3	230	5.0	105	3.40	3.7	2.70
00	465	6.4	225	5.3	103	3.70	4.0	2.70
09	470	6.6	220	5.6	103	(3.80)	4.0	2.70
10	510	6.6	220	5.6	103	(3.80)	4.1	2.50
11	485	6.9	210	5.6	103	(4.00)	4.2	2.50
12	520	6.8	215	5.6	103	(4.00)	4.2	2.50
13	490	7.0	220	5.6	105	(3.90)		2.50
14	450	7.4	220	5.5	105	3.85		2.50
15	450	7.3	230	5.5	105	3.80		2.60
16	410	7.4	230	5.2	105	3.50		2.60
17	390	7.8	245	4.7	109	3.15		2.65
18	---	8.0	260		117	2.70	3.0	2.70
19		8.0	280		125	----	2.9	2.70
20		7.8	280				2.8	2.60
21		8.1	280				2.3	2.60
22		7.3	295				3.1	2.50
23		7.0	300				.	2.50

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 5

Ft. Monmouth, New Jersey (40.3°N, 74.1°W) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.6	<285				(2.9)	2.60
01		6.2	290				(2.6)	2.60
02		5.7	290				2.4	2.55
03		5.5	280				(2.0)	2.60
04		5.0	300				(4.2)	2.70
05		5.4	275		<125	(2.15)		2.80
06	(395)	5.9	245	---	109	2.00	2.8	2.85
07	450	6.2	240	4.7	107	3.30	3.4	2.70
00	520	6.2	225	5.0	107	3.60	3.9	2.60
09	525	6.7	210	5.2	105	(3.05)	4.2	2.50
10	550	6.6	200	5.4	105	(4.00)	4.3	2.40
11	520	6.6	210	5.4	105	(4.10)	4.3	2.50
12	505	6.8	210	5.5	105	4.15	4.2	2.50
13	525	6.9	210	5.6	105	(4.10)	4.2	2.50
14	500	7.0	220	5.4	105	4.00	4.0	2.50
15	405	7.1	220	5.4	105	3.90		2.50
16	460	7.3	230	5.2	107	3.65		2.50
17	420	7.4	235	4.7	109	3.30		2.60
18	---	7.6	250		111	(2.75)	3.2	2.70
19		7.2	200		121	2.05	2.4	2.70
20		7.7	275				(3.4)	2.65
21		7.9	<280				3.0	2.60
22		7.5	280				3.2	2.65
23		7.0	285				(2.6)	2.65

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 6

Okinawa I. (26.3°N, 127.8°E) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		10.8	320				(4.2)	2.60
01		11.0	290				(3.5)	2.70
02		10.2	280				(3.6)	2.70
03		9.0	265				(2.6)	2.70
04		8.2	270				(2.1)	2.65
05		7.7	275				(3.0)	2.60
06		8.3	260		131	(2.10)	2.4	2.85
07		8.8	240		111	(2.90)	3.9	3.00
08		8.9	230		109	(3.40)	(5.0)	2.80
09	---	9.2	230	---	107	(3.85)	(6.1)	2.60
10	---	9.9	225	---	107	(4.00)	(5.8)	2.45
11	430	10.7	220	6.4	109	(4.20)	5.2	2.40
12	420	11.5	220	6.4	109	(4.30)	(5.6)	2.50
13	410	12.2	220	6.1	109	(4.20)	5.0	2.50
14	400	12.7	225	6.0	109	(4.15)	4.8	2.50
15	390	13.0	230	6.0	109	4.00	4.8	2.55
16	380	13.2	230	(5.8)	109	3.80	4.2	2.55
17	355	13.2	240	---	109	3.40	(4.8)	2.60
18	330	12.5	250		111	2.80	(3.9)	2.60
19		12.1	275		---	----	(3.1)	2.60
20		11.4	300				(3.3)	2.55
21		11.3	330				(3.6)	2.45
22		>11.2	<340				(3.7)	2.45
23		10.7	330				(3.3)	2.50

Time: 135.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 7

Thule, Greenland (76.6°N, 68.7°W) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.0	260	---	119	2.20		2.65
01	---	6.1	265	---	117	2.20		2.65
02	---	5.7	250	---	113	2.30		2.65
03	---	5.6	245	---	111	2.45		2.80
04	(470)	5.4	250	3.9	109	2.60		2.70
05	460	5.4	240	4.1	109	2.80		2.65
06	400	5.4	240	4.3	109	3.00		2.65
07	445	5.8	230	4.4	109	3.10		2.55
08	500	5.6	235	4.5	109	3.30		2.35
09	530	5.4	230	4.7	109	3.30		2.30
10	510	5.6	230	4.7	107	3.30		2.45
11	540	5.6	230	4.7	107	3.35		2.40
12	490	6.2	230	4.8	107	3.35		2.45
13	470	6.2	225	4.8	109	3.30		2.50
14	470	6.3	230	4.7	107	3.20		2.50
15	450	6.2	230	4.6	107	3.20		2.50
16	450	6.4	235	4.5	109	3.00		2.50
17	430	6.4	230	4.5	109	2.95	3.1	2.60
18	415	6.2	240	4.2	109	2.85		2.65
19	420	6.0	250	4.1	113	2.65		2.55
20	(410)	6.2	255	---	113	2.50		2.70
21	---	6.2	260	---	115	2.35		2.60
22	---	6.0	260	---	115	(2.20)		2.70
23	---	6.0	270	---	119	2.20		2.70

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 8

Fairbanks, Alaska (64.9°N, 147.8°W) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.6)	370				3.6	(2.55)
01	---	(5.2)	(330)				4.0	(2.50)
02	---	(5.5)	(330)				3.7	(2.50)
03	---	(5.5)	365				4.2	(2.55)
04	(440)	(6.0)	(315)	---	---	----	4.0	(2.50)
05	460	(6.0)	(250)	(4.2)	109	(2.60)	4.0	(2.50)
06	435	(6.4)	240	(4.3)	105	(2.80)	4.0	(2.50)
07	470	(6.6)	240	4.5	103	3.10	3.3	(2.45)
08	470	(6.4)	220	(4.7)	101	3.40		(2.45)
09	480	(6.4)	220	(4.9)	103	3.50		2.45
10	495	6.4	220	5.0	103	3.60		2.50
11	495	6.5	220	5.1	103	3.60		2.50
12	505	6.4	220	5.2	105	3.70		2.50
13	500	6.4	220	5.1	105	(3.60)		2.50
14	480	6.4	220	5.2	109	3.55		2.50
15	485	6.6	220	5.0	107	3.45		2.50
16	460	6.6	230	5.0	106	(3.25)		2.60
17	420	6.6	240	4.6	103	3.10		2.65
18	(400)	(6.4)	250	(4.5)	110	2.75		(2.70)
19	(410)	(6.4)	270	---	114	2.45	3.2	(2.75)
20	---	(6.3)	280		---	----	3.4	(2.80)
21		(5.7)	300		---	----	3.3	(2.80)
22		(5.8)	305		---	----	3.3	(2.70)
23		(5.4)	(310)				3.4	(2.60)

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 9

Reykjavik, Iceland (64.1°N, 21.0°W) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		---					3.4	
01		(4.5)					3.4	(2.50)
02		(4.8)					3.5	(2.50)
03		(5.4)			---	----	3.6	(2.50)
04		5.6			---	----		2.55
05		5.9			---	----		2.70
06		6.0		---	---	----		2.70
07		6.2		---	---	----		2.75
00		6.4		5.0	---	----		2.65
09		6.7		(5.2)	---	----		2.60
10		7.0		5.2	---	----		2.60
11		7.0		5.4	---	----		2.55
12		7.0		5.6	---	----		2.55
13		7.3		5.4	---	----		2.60
14		7.4		(5.4)	---	----		2.60
15		7.2		5.2	---	----		2.60
16		7.3		(5.0)	---	----		2.60
17		7.2		4.9	---	----		2.65
18		6.8		(4.6)	<121	3.15		2.70
19		6.8		---	111	3.10		2.70
20		(6.4)		---	---	----		(2.70)
21		(6.0)			---	----		(2.60)
22		(5.8)					3.1	(2.60)
23		(6.0)					3.4	(2.55)

Time: 15.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 10

St. Johns, Newfoundland (47.6°N, 52.7°W) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(6.6)	300					(2.55)
01		6.1	300					2.55
02		5.6	300					2.55
03		5.2	300					2.55
04		5.2	290		127	1.80		2.70
05		5.8	255		119	2.40		2.85
06	---	6.4	240	---	109	2.95	3.0	2.90
07	(415)	6.5	230	5.1	107	3.25	3.4	2.85
08	425	6.9	220	5.4	109	3.55		2.80
09	450	7.0	220	5.4	106	(3.70)		2.65
10	455	7.4	215	5.8	105	(3.95)		2.70
11	430	7.6	215	5.8	105	(3.95)		2.60
12	440	7.6	220	5.8	107	(4.00)		2.60
13	430	7.8	220	5.8	105	(3.90)		2.55
14	430	7.9	225	5.6	105	3.80		2.60
15	400	8.4	230	5.5	109	3.55		2.60
16	(400)	8.6	235	5.2	111	3.30		2.65
17	---	8.0	240	---	113	2.95	3.2	2.65
18		9.0	265		119	2.45	2.6	2.70
19		8.6	270		---	----		2.70
20		8.4	270				2.8	2.60
21		0.2	280					2.55
22		(7.5)	290					(2.55)
23		(7.0)	300				(2.2)	(2.50)

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 11

Watheroo, W. Australia (30.3°S, 115.9°E) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.2	250					3.00
01		5.0	250					<3.00
02		4.6	250					<2.90
03		4.5	250					<2.95
04		4.2	<250					2.90
05		4.2	240					<2.95
06		4.0	220					3.05
07		6.5	230			1.65		3.20
00		9.2	220			2.60	2.6	3.50
09	---	11.5	220	---		3.15	3.5	3.35
10	---	11.8	220	---		3.40	3.8	3.35
11	---	11.8	220	---		3.50	3.9	<3.25
12	(250)	>11.8	220	4.8		3.70	3.8	3.10
13	---	11.8	220	---		3.65	3.8	3.05
14	(250)	11.7	220	4.7		3.55	3.8	<3.05
15	---	11.6	220	---		3.30	3.5	3.05
16		11.5	220			2.90	3.2	3.10
17		(11.4)	230			2.20	2.2	(2.95)
10		----	210				2.0	----
19		>7.0	210					(3.05)
20		7.0	220					3.15
21		6.0	230					<3.00
22		5.8	240					3.05
23		5.6	<250					2.95

Time: 120.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 45 seconds.

Table 12

Tromso, Norway (69.7°N, 19.0°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.5	(355)				(3.1)	2.30
01		(5.6)	---		---	----	(3.3)	(2.30)
02		5.4	---		---	----	(3.3)	2.30
03		5.8	(350)		---	----	(3.3)	2.45
04		5.9	(310)		---	----	(3.2)	2.55
05		6.1	(290)		---	2.30	2.6	(2.55)
06		6.4	275		120	2.70		(2.55)
07	(605)	6.8	250	4.45	115	2.80		2.40
00	(520)	7.0	250	4.80	110	3.15		2.45
09	(420)	7.8	245	5.10	110	3.20		2.45
10	(470)	8.0	245	5.10	110	3.20		2.40
11	(445)	8.0	240	5.15	110	3.30		2.50
12	(470)	8.2	240	5.20	110	3.40		2.55
13	(450)	8.3	240	5.00	115	3.30		2.55
14	---	8.2	240	----	110	----		2.55
15	(430)	7.1	240	----	115	3.15		2.55
16	---	7.4	250	----	110	3.00		2.60
17	---	6.6	255	----	110	2.75		2.65
18		6.9	290		130	2.90		2.65
19		6.6	300		135	3.10	3.1	2.70
20		6.4	(305)		---	2.85		2.55
21		5.8	330		---	----	2.5	2.40
22		5.0	345		---	----	2.1	2.35
23		(5.8)	---		---	----	2.8	(2.30)

Time: 15.0°E.
Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 13

Lycksele, Sweden (64.6°N, 18.8°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.8	360				3.1	2.3
01		5.9	390				2.6	2.3
02		5.7	355				1.9	2.4
03		5.6	320		---	E		2.4
04	---	5.6	300	----	---	1.50		2.5
05	(320)	5.7	265	3.55	110	1.95		2.6
06	325	6.3	250	3.80	110	2.30		2.7
07	340	6.4	240	4.40	110	2.90		2.6
08	380	7.2	230	4.95	105	3.05		2.6
09	370	7.5	230	5.20	105	3.25		2.6
10	380	7.9	220	5.35	105	3.30		2.6
11	385	8.0	220	5.45	105	3.30		2.6
12	370	8.5	220	5.40	105	3.40		2.7
13	400	8.3	225	5.50	105	3.40		2.6
14	380	8.8	230	5.30	105	3.40		2.65
15	410	8.2	230	5.05	105	3.20		2.7
16	350	8.1	230	5.00	105	3.05		2.7
17	---	7.4	250	----	110	2.60		2.8
18		7.5	250		110	2.25		2.7
19		7.1	270		130	1.85		2.7
20		6.2	275		---	E	2.1	2.6
21		6.0	310		---	E	2.7	2.4
22		6.0	325				3.0	2.3
23		6.0	350				4.0	2.4

Time: 15.0°E.
Sweep: 1.4 Mc to 17.0 Mc in 6 minutes, automatic operation.

Table 14

Baker Lake, Canada (64.3°N, 96.0°W) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		6.4	280		---	---	3.8	---
01		6.2	290		---	---	<1.6	---
02		5.8	290		---	---	<2.0	---
03		5.0	300		---	1.2	<2.0	---
04		5.0	300		120	1.0		---
05	---	5.6	290	---	115	2.0		---
06	(470)	5.3	200	3.9	115	2.3		(2.7)
07	420	5.5	240	4.2	110	2.7		2.6
08	480	5.8	220	4.5	110	3.0		(2.4)
09	670	5.9	220	4.8	105	3.3		G
10	500	5.8	240	4.7	105	3.5		2.2
11	570	5.8	240	4.8	110	3.7		2.4
12	440	6.4	230	4.9	110	3.7		2.5
13	460	7.5	240	5.0	105	3.6		2.55
14	440	7.4	240	4.9	105	3.5		2.6
15	420	7.0	230	4.8	105	3.4		(2.6)
16	460	6.6	240	4.7	110	3.2		(2.6)
17	460	6.4	250	4.7	110	3.0		2.6
18	(440)	6.5	260	4.4	110	2.7		2.75
19		6.4	280	---	110	2.3		2.7
20		6.1	290		120	2.0	3.2	2.7
21		6.0	300		125	1.8	3.2	(2.6)
22		5.8	290		120	1.2	4.2	---
23		6.2	200		---	---	3.4	---

Time: 90.0°W.
Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 15

Oslow, Norway (60.0°N, 11.1°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(6.0)	350				(2.3)	----
01		(5.3)	360				1.8	----
02		(5.3)	345				(1.6)	----
03		(4.8)	345				1.4	(2.40)
04		(4.8)	315		---	----	1.4	2.40
05		5.1	290		120	(1.85)		2.55
06	---	5.8	260	----	110	2.15		2.75
07	---	6.3	250	----	110	2.70		2.70
00	(470)	6.9	245	----	110	3.00		2.60
09	---	8.0	245	----	110	3.25		2.60
10	(495)	8.4	235	----	110	3.45		2.55
11	(440)	8.8	240	5.20	105	3.60		2.55
12	(455)	9.4	235	5.50	105	3.65		2.55
13	(450)	9.8	240	5.40	105	3.70		2.55
14	(450)	9.6	245	5.70	110	3.60		2.60
15	(440)	9.6	240	----	110	3.40		2.65
16	---	9.7	245		110	3.20		2.60
17		9.6	250		115	2.90		2.70
18		9.4	250		115	2.50		2.75
19		9.0	255		110	2.10		2.80
20		8.2	255		---	----	1.6	2.70
21		8.0	260				1.6	2.70
22		(7.2)	300				(2.4)	(2.55)
23		(7.0)	325				(2.6)	----

Time: 15.0°E.
Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 16

Lindau/Harz, Germany (51.6°N, 10.1°E) April 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	6.60					2.6	2.45
01	330	6.30					2.7	2.30
02	320	6.10					2.6	2.35
03	310	5.70			---	E	2.3	2.40
04	295	5.40			---	E	2.6	2.50
05	290	5.35	---	----	---	1.20	3.1	2.65
06	255	6.30	250	----	115	2.10	3.5	2.80
07	235	6.90	235	----	100	2.70	3.8	2.80
08	320	7.70	230	5.35	100	3.10	3.9	2.75
09	385	8.90	225	5.20	100	3.40	4.0	2.65
10	320	10.20	220	5.80	100	3.60	4.0	2.65
11	345	10.20	220	5.90	100	3.80	4.4	2.60
12	345	10.85	215	6.20	100	3.75	4.3	2.60
13	375	10.95	220	6.30	100	3.80	4.3	2.60
14	350	10.90	230	6.20	100	3.75	4.0	2.65
15	(275)	10.75	230	----	100	3.60	3.9	2.65
16	(340)	10.35	235	----	100	3.40	3.8	2.70
17	(240)	10.25	240	----	100	3.00	3.6	2.75
18	245	10.35	250	----	110	2.45	3.5	2.75
19	250	10.00			130	1.75	3.1	2.80
20	240	9.10			---	E	2.6	2.75
21	250	8.40					2.6	2.65
22	275	7.50					2.4	2.50
23	300	7.15					2.4	2.50

Time: 15.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 4 minutes.

Table 17

Winnipeg, Canada (49.9°N, 97.4°W) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		4.8	330				3.0	(2.5)
01		5.0	380				3.5	(2.5)
02		5.0	360				3.4	2.5
03		5.0	360				3.0	(2.5)
04		5.0	340		---	---	2.1	2.5
05		5.0	330		---	---		2.6
06	---	5.4	290		120	2.0		2.7
07	330	6.1	280	---	120	2.8		2.7
08	400	6.5	240	4.6	110	3.0		2.7
09	420	6.9	240	5.0	110	3.3		2.55
10	480	7.0	220	5.1	110	3.6		2.5
11	500	7.0	230	5.2	110	3.8		2.5
12	480	7.0	240	5.2	110	3.9		2.45
13	500	7.2	240	5.3	110	3.9		2.45
14	500	7.5	240	5.3	110	3.8		2.5
15	480	7.8	240	5.1	110	3.7		2.5
16	430	7.8	240	5.0	110	3.3		2.5
17	400	7.7	250	4.8	110	3.0		2.5
18	340	7.2	280	---	115	2.8		2.6
19	---	7.2	280	---	130	2.0		2.7
20		7.0	280		---	---	<1.6	2.7
21		6.0	290				<1.6	2.7
22		5.0	320				2.6	2.6
23		5.0	320				3.0	2.6

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 18

Schwarzenburg, Switzerland (46.8°N, 7.3°E) April 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.7						2.8
01	300	7.4						2.8
02	300	7.2						2.7
03	300	6.8						2.8
04	300	6.4						2.85
05	280	6.3						3.0
06	240	6.5	---	---	100	1.9		3.3
07	210	7.5	---	---	100	2.5		3.5
08	210	8.3	200	5.0	100	3.0		3.5
09	200	9.3	200	5.4	100	3.2		3.2
10	260	10.0	200	6.0	100	3.5		3.2
11	300	10.8	200	5.7	100	3.6		3.0
12	300	11.5	200	6.2	100	3.8		3.0
13	300	11.3	200	6.5	100	3.8		3.0
14	310	11.5	200	6.6	100	3.7		3.0
15	280	11.3	200	6.2	100	3.6		3.0
16	260	11.2	210	6.0	100	3.4		3.05
17	210	11.1	220	6.1	100	3.0		3.1
18	220	10.6	---	---	100	2.5		3.2
19	230	10.6			100	2.0		3.3
20	210	10.3						3.3
21	240	8.8						3.05
22	260	8.0						2.95
23	290	8.1						2.9

Time: 15.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 19

Ottawa, Canada (45.4°N, 75.9°W) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.0	320				<1.6	2.5
01		5.0	350				<1.6	2.5
02		4.8	360				<1.5	2.4
03		4.8	330				<1.5	2.5
04		4.7	330				<1.5	2.5
05		4.9	310		120	1.5		2.6
06	---	5.8	270	---	110	2.2		2.8
07	350	6.3	250	---	110	3.0		2.8
08	340	6.6	230	4.9	110	3.3		2.7
09	380	6.8	230	5.2	105	3.5		2.55
10	430	7.0	210	5.3	105	3.8		2.5
11	480	7.2	220	5.4	105	3.9		2.5
12	430	7.7	220	5.6	105	3.9		2.5
13	430	7.8	220	5.6	105	3.9		2.5
14	420	8.0	230	5.5	105	3.8		2.5
15	380	8.3	230	5.3	105	3.6		2.5
16	380	8.6	240	5.2	110	3.3		2.6
17	360	8.8	250	4.6	110	3.0		2.55
18	330	8.6	280	---	120	2.4		2.6
19	---	7.6	300		130	1.5		2.6
20		7.0	280				<1.5	2.55
21		6.7	290				<1.5	2.6
22		6.1	290				<1.6	2.45
23		5.4	300				<1.6	2.4

Time: 75.0°W.
Sweep: 1.0 Mc to 20.0 Mc in 15 seconds.

Table 20

Wakkanai, Japan (45.4°N, 141.7°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		8.0	310					2.50
01		7.8	300					2.50
02		7.3	285					2.55
03		6.8	290					2.50
04		6.7	300					2.50
05		7.4	270					2.60
06	---	9.4	235				2.4	2.85
07	---	10.9	235				3.3	2.85
08	(250)	11.3	230				3.6	2.85
09	240	12.0	230				4.0	2.80
10	240	12.0	225				4.0	2.70
11	240	12.1	225				4.0	2.70
12	240	12.2	225				4.1	2.70
13	250	12.0	230				3.7	2.65
14	250	11.8	235					2.65
15	---	11.3	235					2.65
16	---	11.0	240				2.2	2.70
17		10.8	250				2.8	2.75
18		10.7	255				2.3	2.80
19		10.0	245				2.0	2.75
20		9.0	250				2.0	2.70
21		8.2	260					2.60
22		8.2	285					2.60
23		8.0	300					2.55

Time: 135.0°E.
Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 21

Akita, Japan (39.7°N, 140.1°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		8.4	310				(1.2)	2.55
01		8.2	300					2.60
02		8.1	290				(1.4)	2.60
03		7.5	280				(1.4)	2.50
04		7.1	300				(1.5)	2.45
05		7.7	295				1.4	2.55
06		9.6	245					2.90
07	---	11.3	240					3.00
08	(245)	12.0	240					2.90
09	250	12.5	240				4.2	2.80
10	250	13.0	230				4.2	2.80
11	250	13.2	235				4.4	2.70
12	250	13.1	225				4.3	2.70
13	250	13.0	230				3.8	2.65
14	250	12.8	240					2.65
15	250	12.1	245					2.65
16	(250)	11.6	245				3.5	2.70
17	---	11.6	250				3.5	2.75
18		11.5	255				(2.6)	2.85
19		10.4	250				(2.4)	2.80
20		9.0	250					2.70
21		8.5	290					2.55
22		8.4	300					2.55
23		8.5	310					2.55

Time: 135.0°E.
Sweep: 0.85 Mc to 22.0 Mc in 2 minutes.

Table 22

Tokyo, Japan (35.7°N, 139.5°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.3	320					2.50
01		9.0	300					2.60
02		8.7	300					2.65
03		7.9	265					2.50
04		7.4	300					2.50
05		8.0	300			----		2.50
06	---	10.3	250			2.50		2.90
07	---	11.9	240			3.00		2.85
08	(250)	12.6	245			3.50	3.7	2.80
09	250	13.1	240	---		3.70	3.9	2.70
10	250	13.5	240	---		3.80	4.3	2.65
11	250	13.8	240	---		(4.00)	4.4	2.60
12	255	13.9	240	---		4.05		2.60
13	260	13.8	245	---		4.00		2.60
14	(275)	13.6	245	---		3.75		2.55
15	---	13.2	250	---		3.70		2.60
16	(300)	12.9	255			3.25		2.60
17	(295)	12.8	260			2.70	3.2	2.65
18		12.5	275			----	3.0	2.75
19		10.9	260				2.6	2.75
20		9.5	270				2.0	2.60
21		9.3	300					2.45
22		9.4	315					2.55
23		9.4	320					2.60

Time: 135.0°E.
Sweep: 1.0 Mc to 17.2 Mc in 2 minutes.

Table 23

Yamagawa, Japan (31.2°N, 130.6°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		11.1	300				(2.6)	2.65
01		10.4	300				(2.3)	2.65
02		9.8	290				(2.4)	2.70
03		9.0	260				(1.9)	2.70
04		8.3	275				(1.6)	2.55
05		7.8	290				(1.7)	2.50
06		8.7	275				(2.0)	2.65
07		10.9	245				3.0	2.95
08	---	12.1	240				3.7	2.85
09	(250)	12.7	240				4.2	2.75
10	250	13.6	230				4.4	2.70
11	<250	14.0	230				4.4	2.65
12	250	14.4	230				4.4	2.65
13	250	14.6	240				4.5	2.60
14	250	14.4	230				4.0	2.60
15	250	14.4	245				4.0	2.60
16	(260)	14.0	250				4.0	2.60
17	---	13.9	250				3.5	2.65
18		13.8	270				3.0	2.70
19		13.0	270				(3.0)	2.75
20		11.6	260				(2.9)	2.60
21		11.2	290				(2.2)	2.50
22		11.1	305				(3.0)	2.55
23		11.2	300				(2.6)	2.60

Time: 135.0°E.
Sweep: 1.0 Mc to 20.0 Mc in 1 minute.

Table 24

Formosa, China (25.0°N, 121.5°E) April 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	>15.5					(2.7)	2.8
01	260	14.1					(2.9)	2.85
02	260	12.4						2.8
03	250	11.3						2.8
04	260	9.7					(2.7)	2.8
05	260	8.4					2.4	2.8
06	250	9.7					2.6	2.9
07	240	11.5			---	---	2.9	2.8
08	240	12.7	---	---	120	3.4	4.0	2.7
09	230	13.6	230	---	110	3.8	4.1	2.7
10	---	14.6	220	---	110	4.0	5.0	2.6
11	---	15.4	220	---	120	4.1	4.1	2.6
12	---	>16.4	---	---	---	---		2.6
13	---	16.5	230	---	---	---		2.5
14	---	>17.0	240	---	---	---		2.5
15	---	(17.5)	240	---	---	---		2.6
16	---	17.6	240	---	120	3.3	3.6	2.55
17	(260)	17.5	240	---	---	---	3.3	2.6
18	280	17.2					3.1	2.6
19	280	>16.9					3.6	2.6
20	310	17.2					3.2	2.5
21	300	(17.9)					3.0	(2.6)
22	280	17.6					(2.9)	2.7
23	280	17.1					(2.7)	2.7

Time: 120.0°E.
Sweep: 1.1 Mc to 19.5 Mc in 15 minutes, manual operation.

Table 25

Nairobi, Kenya (1.3°S, 36.8°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		>14.0	220					
01		>14.1	220					---
02		(13.4)	220					<3.0
03		>10.8	230					(3.0)
04		11.1	240					(3.1)
05		9.9	220				1.7	(3.3)
06		>6.6	220				1.9	3.4
07		8.8	250				3.0	(3.2)
08		>11.0	240			3.0	3.5	3.15
09	---	>13.4	240			3.6	4.0	2.9
10	---	(13.8)	220			---		(2.75)
11	---	14.6	(220)			---		(2.6)
12	---	>15.4	---			---		(2.5)
13	---	----	---			---		---
14	---	----	---			---		---
15	420	>15.4	(230)			---		(2.4)
16	430	(15.3)	240			---		(2.5)
17	(400)	(15.3)	250			3.2	3.5	(2.5)
18		----	270			---	(2.6)	
19		----	310				(2.5)	
20		----	350				(2.4)	
21		----	280				(2.6)	
22		----	240					
23		>12.5	220					

Time: 45.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 26

Johannesburg, Union of S. Africa (26.2°S, 28.0°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.2	250				2.4	2.9
01		5.0	250				2.4	2.8
02		4.8	260				2.1	2.8
03		4.5	250					2.8
04		4.3	250					2.8
05		4.1	<260					2.85
06		4.8	250					2.8
07		9.0	230			2.4		3.2
08	---	11.6	230			3.1		3.2
09	(250)	13.2	230			3.5		3.0
10	250	13.9	220			3.8	4.2	2.9
11	250	14.0	220			3.9		2.9
12	(300)	13.7	210			4.0	4.3	2.7
13	(310)	13.8	220			4.0		2.7
14	(310)	14.0	230	---		3.9		2.6
15	---	13.7	240			3.6	4.0	2.6
16		13.3	240			3.2	3.9	2.7
17		13.1	240			2.6	3.1	2.8
18		12.6	240			---	2.4	2.8
19		11.2	230				2.2	2.9
20		>10.1	240				2.1	2.9
21		9.2	240					3.0
22		7.9	240				2.6	3.0
23		6.4	240				3.0	2.9

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 27

Capetown, Union of S. Africa (34.1°S, 18.3°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		4.4	250					2.8
01		4.1	<280					2.7
02		4.0	<300					2.7
03		4.0	<300					2.6
04		4.0	(260)					2.7
05		3.8	<260					2.75
06		3.6	250					2.8
07		5.4	260					2.9
08	---	9.1	230			2.6		3.2
09	---	>11.6	230			3.1		(3.1)
10	250	>12.8	230			3.4	3.6	---
11	240	>13.0	230	---		3.6		---
12	240	>13.3	220	---		---		
13	---	>13.6	230			---		
14	---	>13.7	240			---		
15	(270)	>13.4	240			3.7		---
16	---	>13.3	240			3.4		
17		>13.0	240			2.9		
18		>12.8	240			2.2		---
19		>11.6	230				1.7	---
20		10.8	230					(2.9)
21		>9.4	230					(3.0)
22		7.6	230					3.1
23		5.8	230					3.0

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 28

Buenos Aires, Argentina (34.5°S, 58.5°W) April 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	11.1						2.95
01	260	11.2						3.0
02	240	10.4						3.0
03	250	8.8						3.0
04	250	7.4						2.9
05	280	7.2						2.7
06	280	7.6						2.9
07	220	11.2	---	---				3.1
08	210	13.4	---	---	---	---		3.1
09	220	14.9	210	(7.3)	---	---	4.4	3.1
10	220	15.0	210	(7.5)	---	---	5.3	3.1
11	270	15.2	210	(8.0)	---	---	5.3	3.0
12	280	15.2	(210)	(8.4)	---	---	6.1	3.0
13	300	15.5	210	(8.4)	---	---	5.5	3.0
14	300	15.6	220	(8.3)	---	---	5.5	3.0
15	290	15.6	220	(8.1)	---	---	5.2	3.0
16	250	15.9	220	(7.2)	---	---	4.4	3.0
17	220	15.5						3.0
18	210	14.4						3.0
19	220	(14.0)						(3.1)
20	240	(13.6)						(3.0)
21	220	(12.5)						(3.1)
22	240	12.0						3.0
23	260	11.5						3.0

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 29

Yakutsk, U.S.S.R. (62.0°N, 129.4°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	350	(5.0)						2.6
01	380	(4.3)						2.6
02	390	(4.2)						2.5
03	410	(4.0)						2.5
04	400	(3.8)						2.6
05	400	3.8						2.6
06	310	4.6						2.7
07	260	5.8						2.9
08	250	7.0			150	2.8		3.1
09	240	8.8			120	3.0		3.0
10	230	9.2						3.1
11	230	10.4			120	3.2		3.0
12	230	11.0			130	3.3		3.0
13	230	11.4			120	3.2		2.9
14	230	11.6			120	3.4		3.0
15	230	11.4			120	3.4		3.0
16	230	11.6			130	3.2		2.9
17	230	11.6			130	2.9		3.0
18	240	11.4						2.9
19	240	10.6						3.0
20	240	9.4						2.9
21	270	8.1						2.9
22	280	6.8						2.7
23	310	(5.6)						2.7

Time: 120.0°E.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.

Table 30

Leningrad, U.S.S.R. (59.9°N, 30.7°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	5.2						2.5
01	340	4.9						2.5
02	340	4.9						2.6
03	320	4.7						2.5
04	320	5.0						2.5
05	300	4.8						2.5
06	280	5.2						2.6
07	260	6.0			120	2.1		2.7
08	260	7.3	240	4.0	120	2.3		2.7
09	240	8.3	220	4.4	120	2.7		2.8
10	260	9.3	240	5.0	100	3.1		2.9
11	240	10.3	220	5.1	100	3.3		2.7
12	280	11.0	220	5.3	100	3.5		2.8
13	240	11.2	220	5.5	100	3.5		2.8
14	240	11.9	220	5.2	100	3.5		2.7
15	240	11.5	240	5.2	100	3.4		2.7
16	240	11.0	240	5.5	100	3.3		2.7
17	240	11.2	---	---	100	2.9		2.8
18	240	10.5	220	3.0	120	2.5		2.8
19	240	10.2			120	2.0		2.0
20	240	9.0						2.8
21	240	7.7						2.8
22	260	6.6						2.6
23	280	6.0						2.5

Time: 30.0°E.
Sweep: 1.0 Mc to 18.0 Mc in 10 minutes, semi-automatic operation.

Table 31

Tomsk, U.S.S.R. (56.5°N, 84.9°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.7						2.4
01	320	5.3						2.4
02	340	5.1						2.4
03	340	4.9						2.4
04	340	4.6						2.4
05	310	4.5						2.4
06	300	5.0			---	1.3		2.5
07	280	6.4			130	1.7		2.8
08	270	8.0			130	2.4		2.7
09	240	9.6	240	---	130	2.9		2.9
10	240	11.6	220	4.7	120	3.2		2.8
11	240	12.3	220	5.0	120	3.3		2.8
12	250	13.1	230	5.2	120	3.5		2.7
13	250	12.7	220	4.9	120	3.5		2.7
14	240	13.1	220	---	120	3.3		2.7
15	230	12.7			120	3.2		2.7
16	240	12.7			120	2.9		2.7
17	260	11.8			130	2.6		2.7
18	260	11.4			130	2.0		2.7
19	250	10.5			---	1.5		2.7
20	260	9.2						2.7
21	260	8.0						2.7
22	280	7.2						2.5
23	290	6.4						2.5

Time: 90.0°E.
Sweep: 1.1 Mc to 16.0 Mc in 10 minutes, manual operation.

Table 32

Moscow, U.S.S.R. (55.5°N, 37.3°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	5.1						2.43
01	320	4.8						2.45
02	310	4.5						2.39
03	310	4.3						2.42
04	300	4.0			---	E		2.44
05	280	4.2			(120)	1.2		2.65
06	260	5.4			(120)	1.9		2.90
07	250	7.2	(250)	(3.7)	110	2.5		2.88
08	260	8.8	240	4.0	110	2.8		2.82
09	260	10.2	240	5.0	110	3.1		2.82
10	270	11.0	230	5.2	110	3.4		2.74
11	270	11.6	230	5.2	110	3.5		2.71
12	260	11.9	230	5.4	110	3.5		2.70
13	260	11.8	230	5.2	110	3.4		2.70
14	250	11.8	240	4.6	110	3.2		2.72
15	250	11.5	(240)	(4.3)	110	3.0		2.78
16	240	11.0			110	2.6		2.80
17	240	10.6			120	2.1		2.84
18	240	10.0			130	1.5		2.80
19	240	9.0			---	E		2.82
20	240	7.1						2.64
21	260	6.1						2.58
22	290	5.8						2.51
23	320	5.2						2.40

Time: 30.0°E.
Sweep: 0.5 Mc to 20.0 Mc in 10 to 30 seconds.

Table 33

Chita, U.S.S.R. (52.0°N, 113.3°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.0						2.5
01	300	6.7						2.5
02	320	6.3						2.6
03	320	6.3						2.5
04	310	5.9						2.5
05	320	5.7						2.5
06	320	5.4						2.5
07	300	5.7						2.6
08	260	7.1			---	(2.2)		2.9
09	250	9.3			120	(2.7)		3.0
10	240	10.7			120	(3.1)		3.1
11	240	10.8			120	(3.3)		3.1
12	240	10.9			120	(3.5)		3.1
13	240	10.9			120	(3.6)		3.1
14	240	10.9			120	(3.6)		3.1
15	240	11.0			120	(3.5)		3.0
16	240	10.8			120	(3.3)		3.0
17	240	10.9			120	(3.1)		3.0
18	250	10.8			120	(2.8)		3.0
19	250	10.6			120	(2.3)		3.0
20	250	9.9						3.0
21	250	9.3						2.8
22	260	8.5						2.8
23	260	7.7						2.7

Time: 120.0°E.
Sweep: 1.0 Mc to 18.0 Mc in 5 minutes, semi-automatic operation.

Table 34

Yuzhno-Sakhalinsk, U.S.S.R. (47.0°N, 143.0°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	7.0						2.8
01	300	7.0						2.6
02	340	6.8						2.4
03	330	6.6						2.5
04	320	6.3						2.4
05	320	6.1						2.5
06	320	5.9						2.5
07	290	6.0						2.5
08	250	7.6						2.9
09	240	9.2	230	3.8	120	2.8		3.2
10	240	10.3	230	4.6	120	3.0		3.3
11	240	11.4	230	4.8	120	3.4		3.1
12	240	12.0	220	4.6	120	3.4		3.2
13	240	11.5	230	4.6	120	3.5		3.1
14	240	10.7	230	4.8	---	3.6		3.3
15	240	10.6			---	---		3.4
16	240	10.5			---	3.2		3.3
17	240	10.5			---	3.2		3.2
18	250	10.5			120	2.8		3.2
19	250	10.3						3.2
20	250	9.0						3.4
21	250	8.0						3.2
22	250	7.6						3.0
23	260	7.4						2.9

Time: 140.0°E.
Sweep: 1.0 Mc to 18.0 Mc in 10 minutes, semi-automatic operation.

Table 35

Wakkanai, Japan (45.4°N, 141.7°E) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.6	305					2.50
01		6.4	300					2.55
02		6.4	280					2.55
03		6.1	280					2.50
04		5.9	275					2.50
05		5.8	295					2.55
06		7.3	240					3.00
07	---	10.2	230					3.05
08	---	11.8	225				3.3	3.00
09	(230)	12.6	225				3.3	2.95
10	235	13.2	220				3.2	2.95
11	230	13.3	225					2.90
12	230	13.2	225					2.85
13	235	13.0	220					2.85
14	(240)	12.7	230					2.75
15	---	12.2	235					2.75
16	---	12.0	240					2.75
17		11.5	240					2.85
18		10.6	230					2.85
19		9.3	240					2.80
20		(8.0)	245					2.75
21		7.2	260					2.70
22		6.8	270					2.65
23		6.8	280					2.50

Time: 135.0°E.
Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 36

Simferopol, U.S.S.R. (44.4°N, 34.0°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		6.1						
01		5.8						
02		6.1						
03		6.1						
04		5.4						
05		5.3						
06		5.0						
07		6.0						
08		8.8				2.6		
09		10.5				3.1		
10		12.8				3.3		
11		13.3				3.5		
12		13.5				3.6		
13		13.8				3.6		
14		13.8				3.7		
15		13.0				3.6		
16		12.8				3.3		
17		12.8				3.0		
18		12.0				2.5		
19		11.3						
20		9.0						
21		8.7						
22		9.0						
23		7.0						

Time: 30.0°E.
Sweep: 0.5 Mc to 16.0 Mc in 15 seconds.

Table 37

Alma-Ata, U.S.S.R. (43.2°N, 76.9°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.5						2.6
01	300	6.3						2.6
02	300	6.0						2.6
03	300	5.9						2.6
04	280	5.7						2.6
05	270	5.6			---	E		2.7
06	250	6.8			100	1.5		2.9
07	240	9.0			100	2.3		3.0
08	230	11.6	230	(3.7)	100	2.9		3.0
09	240	12.8	220	4.3	100	3.4		3.0
10	240	13.6	220	4.8	100	3.6		2.9
11	240	13.8	210	4.9	100	3.8		2.8
12	250	13.6	210	5.0	100	3.9		2.7
13	240	13.3	220	4.9	100	3.8		2.7
14	240	12.9	220	4.8	100	3.7		2.8
15	240	12.7	220	4.5	100	3.5		2.7
16	240	12.6	220	4.2	100	3.2		2.7
17	240	12.2			100	2.6		2.8
18	230	11.6			100	1.7		3.0
19	230	10.4			---	E		2.9
20	240	9.3						2.9
21	250	8.1						2.8
22	250	7.4						2.7
23	270	6.7						2.6

Time: 75.0°E.
Sweep: 1.6 Mc to 17.0 Mc in 10 to 15 minutes, manual operation.

Table 38

Akita, Japan (39.7°N, 140.1°E) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.2	300					2.60
01		7.0	300				(1.4)	2.60
02		6.9	280				(1.5)	2.65
03		6.5	260				(1.5)	2.55
04		6.5	270				(1.6)	2.55
05		6.3	295				(1.5)	2.50
06		8.0	250					2.90
07		10.7	240					3.05
00	---	12.4	230					3.05
09	240	13.1	230					2.95
10	240	13.6	225					2.90
11	245	13.6	220					2.90
12	245	13.5	230					2.00
13	250	13.5	230					2.75
14	250	13.2	240					2.75
15	(245)	12.6	240					2.75
16		12.4	245					2.80
17		12.0	250				(2.8)	2.90
18		11.5	250				(2.0)	2.90
19		9.6	240				(1.7)	2.75
20		9.0	250				(1.8)	2.70
21		8.5	270					2.70
22		7.8	285					2.70
23		7.4	295					2.60

Time: 135.0°E.
Sweep: 0.85 Mc to 22.0 Mc in 2 minutes.

Table 39

Tokyo, Japan (35.7°N, 139.5°E) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		8.0	305					2.60
01		7.5	300					2.60
02		7.5	280					2.65
03		7.0	270					2.65
04		6.7	270					2.55
05		6.6	300					2.50
06		8.4	255			2.05		2.85
07		11.0	240			2.60		3.00
08	---	12.7	235			3.20		2.95
09	250	13.5	230	---		3.55		2.85
10	250	14.0	230	---		3.70		2.75
11	250	14.5	230	---		3.75		2.70
12	250	14.6	230	---		----		2.65
13	250	14.4	240	---		3.80		2.60
14	(250)	13.8	240	---		3.75		2.60
15	(255)	13.5	250			3.50		2.65
16	---	13.0	250			3.10	3.2	2.65
17	---	12.7	260			2.35	2.9	2.75
18		12.0	255				(2.4)	2.85
19		10.2	250				(1.8)	2.75
20		9.3	265					2.65
21		9.2	280					2.65
22		9.1	290					2.70
23		8.7	300					2.65

Time: 135.0°E.
Sweep: 1.0 Mc to 17.2 Mc in 2 minutes.

Table 40

Yamagawa, Japan (31.2°N, 130.6°E) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.6	260				(2.0)	2.75
01		8.8	260				(1.8)	2.70
02		8.2	265				(1.7)	2.70
03		8.0	250				1.2	2.85
04		6.8	240					2.70
05		6.5	260				(1.7)	2.55
06		6.5	290				(1.8)	2.60
07		9.3	240				(2.3)	3.00
00	---	12.0	240				2.8	3.05
09	(245)	13.2	240				3.5	2.90
10	240	13.8	230				3.7	2.80
11	240	14.2	225				4.0	2.75
12	245	14.7	220				4.0	2.75
13	245	15.0	230				4.3	2.70
14	250	14.9	240				4.0	2.65
15	(250)	14.5	240				4.2	2.65
16	250	13.9	245				3.8	2.65
17	---	14.0	250				3.3	2.70
18		>13.5	255				(3.0)	2.75
19		13.0	250				(2.6)	2.75
20		12.4	245				(2.1)	2.60
21		11.6	270				(1.8)	2.60
22		11.4	260				(1.8)	2.70
23		10.6	270				(1.8)	2.75

Time: 135.0°E.
Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 41

Leopoldville, Belgian Congo (4.4°S, 15.2°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	11.7						2.57
01	250	10.5						2.54
02	245	9.0						2.66
03	230	7.9						2.78
04	230	5.1					1.7	2.85
05	255	5.6	---	---	---	---	2.1	2.58
06	250	9.1	245	---	115	2.7	3.3	2.87
07	260	10.7	235	---	115	3.5	3.9	2.64
08	300	11.5	225	---	115	3.9		2.38
09	355	12.9	220	---	115	4.0		2.29
10	400	14.0	215	---	110	4.1		2.26
11	425	15.1	215	---	110	4.1		2.21
12	425	16.1	230	---	110	4.1		2.20
13	425	16.2	230	---	110	4.1		2.16
14	430	16.0	235	---	115	3.9		2.08
15	430	15.6	245	---	115	3.6		2.08
16	415	16.0	255	---	120	3.0		2.12
17	380	16.0	285	---	---	---		2.22
18	340	16.4						2.16
19	310	17.0						2.32
20	245	17.5						<2.57
21	220	17.7						2.55
22	225	16.8						2.59
23	230	14.6						2.64

Time: 0.0°.
Sweep: 1.0 Mc to 20.0 Mc in 7 seconds.

Table 42

Elisabethville, Belgian Congo (11.6°S, 27.5°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	7.0						2.47
01	260	6.0						2.44
02	250	5.6					2.5	2.62
03	240	4.7					2.2	2.66
04	250	4.9			---	---	1.8	2.51
05	240	8.9	250	---	115	2.5	2.8	2.86
06	245	11.0	235	---	110	3.2		2.79
07	250	11.5	225	---	110	3.6		2.59
08	(280)	12.3	220	---	110	3.9		2.47
09	---	13.0	220	---	110	4.0		2.40
10	370	13.5	230	---	110	4.1		2.33
11	375	14.0	230	6.6	110	4.1		2.30
12	370	14.1	230	---	110	4.0		2.31
13	365	14.0	240	---	110	3.9	4.3	2.28
14	360	13.5	240	---	110	3.6	4.3	2.29
15	340	13.4	245	---	115	3.0	4.0	2.32
16	275	13.6	260	---	120	2.1	2.9	2.39
17	270	13.7					2.3	2.48
18	260	14.0					2.0	2.60
19	240	>14.0						2.60
20	235	13.1						2.62
21	240	11.7						2.66
22	235	11.5						2.71
23	235	9.0						2.66

Time: 0.0°.
Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 43

Huancayo, Peru (12.0°S, 75.3°W) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.1	225					2.95
01		8.6	230					2.95
02		7.9	245				(3.0)	3.00
03		7.2	250					3.00
04		6.7	230					3.10
05		5.8	235					3.10
06		6.3	260					2.90
07		10.5	250		119	2.60	3.2	3.05
08		13.0	235		113	3.20	(7.0)	2.85
09		14.2	220		---	----	(8.1)	2.55
10		14.3	215		---	----	(10.2)	2.30
11		13.2	210		---	----	(11.2)	2.25
12		12.7	205		---	----	(10.6)	2.15
13	---	12.2	200	---	---	----	(10.6)	2.15
14		>11.4	205		---	----	(8.2)	2.10
15		>11.5	210		---	----	(8.0)	2.10
16		11.3	220		---	---	(7.6)	2.10
17		>11.2	255		---	----	(6.8)	2.15
18		>11.2	295		---	----		2.20
19		>10.6	400					(2.15)
20		>9.2	440					(2.20)
21		>9.0	375					(2.50)
22		9.1	270					2.65
23		9.2	235					2.80

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 44

Rarotonga I. (21.2°S, 159.8°W) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	(11.1)						(2.7)
01	250	(10.0)						(2.7)
02	<250	(8.8)						(2.6)
03	<250	(8.6)						(2.4)
04	300	(8.8)						(2.4)
05	300	(8.8)						(2.5)
06	300	(9.5)	---	---	---	---	1.8	(2.7)
07	250	(12.3)	250	---	(120)	2.5		(3.0)
08	250	13.3	250	---	115	3.2		3.0
09	250	13.5	240	---	115	3.6		2.9
10	300	14.2	240	---	110	(3.9)		2.7
11	(360)	14.8	240	7.5	110	4.0		2.7
12	370	15.0	240	---	110	4.0		2.65
13	380	15.1	240	8.0	110	4.2		2.6
14	390	14.9	250	7.5	110	(4.3)		2.6
15	380	(15.0)	250	7.4	110	3.8		2.6
16	370	(14.7)	250	7.0	110	3.5		(2.7)
17	350	(14.1)	260	---	110	2.9		(2.7)
18	280	(13.6)	260	---	---	(2.1)	3.8	(2.7)
19	300	(13.5)					2.9	(2.6)
20	300	(12.2)					3.0	(2.6)
21	<300	(11.6)						(2.65)
22	300	(11.8)						(2.8)
23	260	(12.0)						(2.8)

Time: 157.5°W.
Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 45

Johannesburg, Union of S. Africa (26.2°S, 28.0°E) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.0	260					2.8
01		5.7	260					2.8
02		5.2	250					2.85
03		4.7	240					2.65
04		4.3	<260					2.7
05		4.0	<270					2.6
06		5.6	270			1.7		2.8
07	---	9.1	230			2.6	2.7	3.2
08	250	11.0	230			3.2	3.4	3.1
09	(250)	12.0	220			3.6	4.0	2.9
10	280	12.3	210	---		3.8	4.2	2.8
11	(280)	12.6	210	---		4.0	4.3	2.7
12	330	13.0	220	---		4.1	4.4	2.6
13	350	13.1	220	---		4.1	4.4	2.6
14	350	13.0	220	---		4.0	4.2	2.6
15	350	12.9	230	---		3.8	4.2	2.6
16	---	12.4	240			3.5	4.0	2.6
17	---	12.0	240			3.0	3.7	2.7
18		11.7	250				2.9	2.8
19		11.0	240				2.1	2.9
20		9.9	240				2.0	2.8
21		8.8	250				1.8	2.9
22		7.7	250				1.7	2.9
23		6.5	260				1.4	2.9

Time: 30.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 46

Yakutsk, U.S.S.R. (62.0°N, 129.4°E) February 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	370	(4.0)						2.7
01	400	(3.6)						2.6
02	430	(3.2)						2.5
03	430	(3.2)						2.6
04	400	(3.6)						2.6
05	380	(3.6)						2.7
06	360	(3.2)						2.7
07	330	(3.9)						2.8
08	250	(5.6)						3.0
09	230	7.8						3.1
10	230	10.8						3.2
11	230	(11.8)						3.1
12	230	(12.4)						3.2
13	230	(12.8)						3.1
14	230	(13.0)						3.1
15	220	(12.8)						3.1
16	230	(12.6)						3.1
17	220	(11.8)						3.1
18	220	(10.4)						3.0
19	230	8.8						3.0
20	240	(7.0)						3.0
21	270	(5.6)						2.9
22	290	(4.4)						2.8
23	340	(3.9)						2.7

Time: 120.0°E.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.

Table 47*

Slough, England (51.5°N, 0.6°W) February 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	315	4.5						2.5
01	320	4.4					2.3	2.5
02	320	4.2					2.3	2.45
03	325	4.0					2.1	2.45
04	310	3.6					2.2	2.55
05	295	3.4					2.2	2.55
06	285	3.3					2.0	2.65
07	260	4.8			(130)	(1.7)	3.1	2.85
08	240	8.5			130	2.1	3.5	3.05
09	245	10.8			125	2.7	3.5	3.05
10	245	12.4			125	3.0	3.5	2.95
11	245	13.0			125	3.2	3.2	2.85
12	235	13.3			120	3.3		2.85
13	235	13.2			120	3.3	3.3	2.85
14	235	12.8			120	3.1	3.2	2.85
15	235	12.2			125	2.9	3.5	2.85
16	225	12.0			130	2.4	3.4	2.95
17	235	11.2			140	1.9	3.0	2.95
18	230	9.6					2.6	2.95
19	235	7.8					2.4	2.9
20	255	6.6						2.7
21	275	5.9						2.6
22	295	5.2						2.55
23	310	5.0						2.5

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 48

Leopoldville, Belgian Congo (4.4°S, 15.2°E) February 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	8.5						2.51
01	260	7.7						2.54
02	250	7.0						2.64
03	240	5.9						2.73
04	250	5.1					1.8	2.70
05	270	5.6			---	---	2.2	2.65
06	260	8.8	245	---	115	2.6	3.1	2.79
07	270	10.4	230	---	110	3.3	3.8	2.66
08	325	10.9	230	---	110	3.8	4.2	2.40
09	350	11.7	220	---	110	4.0	4.5	2.25
10	400	12.6	215	---	110	4.0		2.21
11	415	13.6	225	---	110	4.1		<2.21
12	430	14.0	215	---	110	4.0		2.20
13	425	14.4	215	---	110	4.0		2.21
14	405	14.0	235	---	110	3.9		2.23
15	385	14.0	240	---	115	3.5		2.29
16	375	14.0	250	---	115	3.0	3.6	2.30
17	350	14.0	285	---	---	---	2.6	2.30
18	335	15.0					2.0	2.26
19	295	16.0						2.42
20	240	16.6						2.64
21	230	14.8						2.67
22	220	12.5						2.63
23	230	10.1						2.54

Time: 0.0°.
Sweep: 1.0 Mc to 20.0 Mc in 7 seconds.

Table 49

Elisabethville, Belgian Congo (11.6°S, 27.5°E) February 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	6.4						2.48
01	260	5.6					1.6	2.42
02	270	5.3					1.8	2.43
03	275	4.8					1.7	2.40
04	280	5.2			130	1.6	2.2	2.53
05	250	8.4	245	---	110	2.6	3.2	2.78
06	260	10.0	235	---	100	3.3	4.1	2.70
07	280	10.8	225	---	100	3.7	4.3	2.52
08	310	11.4	220	---	100	4.0	4.8	2.34
09	350	11.8	220	---	100	4.1	4.8	2.32
10	365	12.4	215	---	100	4.2	4.8	2.29
11	370	12.8	220	---	100	4.2	4.6	2.28
12	370	12.7	225	---	105	4.1		2.28
13	375	12.4	230	---	105	4.0		2.28
14	360	11.9	230	---	105	3.7	3.8	2.31
15	335	11.6	245	---	105	3.1	4.0	2.34
16	280	11.5	265	---	110	2.4	3.6	2.38
17	280	11.6					2.7	2.48
18	270	11.5					2.3	2.47
19	260	11.2					2.6	2.52
20	250	10.6					2.3	2.58
21	245	9.5					2.8	2.59
22	240	8.8					2.4	2.56
23	240	7.6						2.54

Time: 0.0°.
Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 50

Christchurch, New Zealand (43.6°S, 172.8°E) February 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.5	300				3.0	2.5
01		7.2	300				<1.8	2.5
02		6.6	300				<2.7	2.4
03		6.4	300				2.8	2.5
04		6.0	300		---	---	<2.4	2.5
05		5.8	300		---	1.2		2.6
06	---	6.5	250		120	2.3	2.8	2.75
07	---	7.3	250	---	100	3.0	3.8	2.9
00	---	8.5	240	---	100	3.4	3.9	2.9
09	(330)	9.4	230	---	100	3.6	4.3	2.85
10	(350)	9.9	220	---	100	3.9	4.0	2.8
11	(310)	9.9	200	---	100	4.0		2.7
12	350	9.6	220	6.0	100	4.0		2.7
13	350	9.8	210	6.0	100	4.0		2.7
14	380	9.4	240	5.9	100	4.0	4.1	2.7
15	(350)	9.1	230	---	100	3.8		2.7
16	---	9.0	240	---	100	3.5	3.7	2.7
17	---	8.7	250		100	3.1		2.7
18		8.8	250		---	2.6	3.0	2.7
19		9.1	260		---	---	3.2	2.7
20		9.1	280		---	---	4.0	2.6
21		9.0	300				3.7	2.6
22		8.8	300				3.2	2.5
23		8.4	300				<2.0	2.6

Time: 172.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 51

Simferopol, U.S.S.R. (44.4°N, 34.0°E) January 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		4.0						
01		4.0						
02		4.2						
03		4.4						
04		4.4						
05		4.2						
06		3.8						
07		3.5						
08		5.4				1.8		
09		8.7				2.3		
10		11.4				2.9		
11		12.9				3.2		
12		12.8				3.4		
13		12.1				3.5		
14		11.8				3.5		
15		11.9				3.1		
16		11.6				2.9		
17		11.0				2.1		
18		9.2						
19		8.3						
20		5.6						
21		4.5						
22		4.1						
23		4.3						

Time: 30.0°E.
Sweep: 0.5 Mc to 16.0 Mc in 15 seconds.

Table 52*

Falkland Is. (51.7°S, 57.8°W) January 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	9.5					3.4	2.3
01	345	9.5					3.1	2.3
02	335	9.4					3.2	2.3
03	345	9.4					2.6	2.3
04	(365)	9.4	330		(135)	(1.8)	3.0	2.2
05		10.2	275		120	2.2	3.8	2.2
06	(450)	10.7	255		105	2.9	4.5	2.2
07	(455)	11.4	250	(5.3)	105	3.3	5.3	2.3
08	445	11.2	245	5.7	100	3.6	5.3	2.2
09	430	11.0	240	6.1	100	3.8	5.3	2.3
10	445	10.8	225	(6.1)	100	4.0	5.2	2.3
11	440	10.7	230	6.1	100	4.1	5.3	2.4
12	430	10.3	230	6.2	100	4.1	5.4	2.4
13	420	10.0	235	6.0	100	4.1	5.0	2.4
14	425	9.6	235	6.1	100	4.1	5.3	2.5
15	415	9.2	245	6.0	100	3.9	5.6	2.5
16	405	8.7	(255)		100	3.7	5.8	2.5
17	(385)	8.6			105	3.4	6.0	2.5
18		8.8			110	2.8	5.7	2.6
19		8.7	280		120	2.1	5.2	2.6
20	300	8.4			---	(1.6)	4.8	2.4
21	325	8.7					3.8	2.3
22	340	9.2					5.5	2.2
23	350	9.4					4.5	2.3

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 53*

Port Lockroy (64.8°S, 63.5°W) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	350	----			175	1.5	2.0	---
01	355	11.6	(335)		150	1.4	1.4	---
02	370	(12.2)	335		150	1.6	2.5	---
03	375	12.0	315	3.8	130	1.8	2.0	---
04	390	(12.0)	285	4.1	120	2.1	3.3	---
05	390	(11.6)	265	4.6	120	2.6	4.9	---
06	390	11.2	255	4.9	115	3.0	5.0	---
07	405	10.2	255	5.3	110	3.2	5.2	(2.2)
08	415	9.7	245	5.4	110	3.4	5.2	(2.4)
09	415	9.2	245	5.7	110		5.8	---
10	460	8.5	240	5.8	110	(3.7)	5.7	---
11	490	(8.0)	240	5.9	110	(3.7)	5.8	---
12	505	7.5	250	5.9	110	(3.9)	5.5	---
13	485	7.3	245	5.9	(110)		5.4	---
14	485	7.2	245	5.8	(110)	(3.8)	5.3	(2.4)
15	480	7.3	255	5.7	110	(3.8)	5.4	---
16	460	7.2	255	5.6	115	3.6	5.4	(2.4)
17	445	7.3	255	5.5	115	3.3	5.4	---
18	420	7.7	260	5.2	115	3.1	4.7	---
19	380	(8.0)	270		120	2.8	4.0	---
20	365	(8.4)	275		120	2.4	3.6	---
21	350	---	290		125	1.7	2.9	---
22	(320)	---	(310)		(125)	1.5	2.3	---
23	335	---	(330)			1.4	2.2	---

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 54

Godhavn, Greenland (69.2°N, 53.5°W) November 1956

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.7)						(2.60)
01		(5.5)						(2.80)
02		(3.9)						(2.65)
03		4.4						(2.00)
04		(3.7)						(2.60)
05		(4.5)						(2.45)
06		(4.9)						(2.70)
07		---						----
00		(3.8)						(2.60)
09		(6.6)						(2.50)
10		(7.7)			---	----		(2.80)
11		(11.0)			---	----		(2.90)
12		8.0			---	(2.20)		(2.65)
13		6.9			---	----		(2.80)
14		(8.2)			---	----		(2.80)
15		6.7			---	----		2.70
16		7.0			---	----		(2.55)
17		(6.5)			---	----		2.40
18		5.6						2.60
19		5.8						2.50
20		(5.8)						(2.50)
21		6.0						2.60
22		(6.4)						(2.60)
23		6.9						(2.65)

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 55*

Port Lockroy (64.8°S, 63.5°W) November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	350	(10.4)			(175)	(1.2)	2.3	---
01	340	(10.7)			(135)	(1.3)	1.2	---
02	365	(10.8)			(150)	(1.1)	2.1	---
03	385	(10.7)	(335)		(140)	1.4	2.0	---
04	445	10.6	300	(3.7)	130	1.9	2.8	---
05	395	(11.1)	275	4.3	120	2.4	3.2	---
06	415	10.2	265	(4.6)	115	2.8	3.6	---
07	390	9.2	250	5.0	115	3.1	3.8	---
08	435	9.7	255	5.4	(110)	(3.4)	4.4	---
09	430	8.8	250	5.5	110	(3.5)	4.6	---
10	445	8.6	250	5.5	115	3.7	4.8	---
11	450	8.4	240	5.4	(110)	3.8	4.6	(2.4)
12	495	8.1	250	5.6	(115)	3.7	5.0	(2.4)
13	530	7.6	245	5.6	(115)	3.8	4.8	(2.4)
14	485	8.3	250	5.5	(115)	(3.5)	4.7	(2.4)
15	470	7.8	250	5.4	(115)	(3.5)	4.8	2.4
16	(440)	8.4	250	(5.3)	(115)	(3.2)	4.2	(2.5)
17	(415)	8.0	255		120	3.1	3.8	(2.4)
18	(295)	7.8	265	(4.7)	115	2.8	4.0	---
19	300	(8.4)	275		120	2.4	2.8	---
20	305	(8.4)			125	2.0	2.9	---
21	305	(8.7)			(135)	1.4	2.4	---
22	315	(8.2)			(165)	(1.2)	1.9	---
23	345	---			(170)	(1.3)		---

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 56*

Ibadan, Nigeria (7.4°N, 4.0°E) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	(10.0)					4.2	---
01	265	(10.9)					5.3	---
02	250	(10.3)					6.0	---
03	250	(8.8)					5.2	(3.0)
04	240	7.7					4.3	(3.2)
05	235	5.6					4.7	3.2
06	265	8.2			137	2.2	5.5	3.0
07		11.4	250		125	3.1	8.5	2.9
08		13.0	240		(119)	3.6	10.9	2.6
09		13.6	230			3.9	14.0	2.2
10		13.2	225			4.1	13.9	2.0
11		12.6	220			4.2	14.2	2.1
12		12.7	215			4.2	14.0	2.1
13		13.1	220			4.1	13.8	2.0
14		13.2	215			3.8	13.8	2.0
15		13.2	230			3.5	13.8	2.0
16		(13.2)	255			3.1	10.8	---
17	285	----			(136)	2.3	>8.3	---
18	400	(9.6)				1.4		---
19	460	(8.6)						---
20	435	(9.0)						---
21	355	(9.6)						---
22	320	(10.0)					2.5	---
23	285	(9.4)					3.8	---

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 57*

Port Lockroy (64.8°S, 63.5°W) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---						---
01	(330)	---						---
02	(340)	---					(1.9)	---
03	(335)	(8.9)					(2.3)	---
04	(310)	(9.0)					(3.2)	---
05	---	(9.2)			---	(2.0)	(3.0)	---
06	---	(9.3)			(120)	(2.5)	(4.0)	---
07	---	---	(250)			2.8	(3.9)	---
08	---	9.0	240		(115)	3.0	4.8	---
09	(315)	10.2	235	(4.9)	(115)	3.2	5.4	---
10	(280)	11.3	235	(5.3)	110	3.3	5.2	(2.7)
11	(325)	11.7	240	(5.2)	110	3.4	5.0	(2.7)
12		12.0	240	(5.7)	110	3.5	4.2	(2.7)
13		12.1	240	(5.6)	110	3.5		2.8
14	(280)	11.6	240		110	3.4	4.0	2.8
15		10.9	240	(5.4)	110	3.2	4.4	(2.8)
16	(260)	10.1	245		115	2.9	1.5	---
17	250	(9.6)	255		120	2.7		---
18	255	9.2			125	2.2		---
19	260	(9.1)			135	1.8	2.2	---
20	270	(9.4)			130	1.4	2.0	---
21	270	(8.7)			150	(1.1)	1.1	---
22	285	(9.0)						---
23	285	---						---

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 58*

Slough, England (51.5°N, 0.6°W) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	315	5.8					2.6	2.5
01	315	5.4					3.0	2.45
02	325	5.2					3.0	2.4
03	330	4.7					2.8	2.45
04	315	4.4					2.6	2.5
05	295	4.4					3.0	2.6
06	290	5.6	270	3.7	130	1.9	3.2	2.85
07	305	7.1	250	4.1	125	2.5	3.5	2.85
08	320	8.0	245	4.8	115	3.0	4.2	2.8
09	335	8.4	240	5.2	115	3.2	4.4	2.75
10	340	9.2	230	5.4	115	3.4	4.6	2.65
11	365	9.8	240	5.6	115	3.5	4.9	2.65
12	355	10.0	235	5.7	115	3.5	4.8	2.65
13	335	9.8	240	5.7	115	3.6	4.8	2.6
14	320	9.6	240	5.5	120	3.4	4.1	2.6
15	315	9.6	245	5.4	115	3.2	4.0	2.65
16	310	9.6	255	5.0	120	3.0		2.65
17	280	9.4	260	4.1	120	2.4	3.5	2.75
18	265	9.2			(135)	(1.9)	3.4	2.8
19	260	8.9					3.3	2.8
20	255	7.8					3.2	2.7
21	275	7.1					3.1	2.6
22	285	6.3					3.0	2.55
23	315	6.1					2.8	2.45

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 59*

Ibadan, Nigeria (7.4°N, 4.0°E) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	(10.2)					4.9	---
01	265	(10.6)					5.9	---
02	240	(10.2)					6.0	(3.2)
03	230	8.5					5.0	(3.3)
04	220	(7.4)					5.4	(3.4)
05	225	(5.8)					5.8	(3.2)
06	250	(8.2)			132	2.1	>7.7	(3.1)
07		(11.0)	235		116	3.1	(10.2)	3.1
08		12.8	225		(113)	3.6	13.6	2.9
09		13.8	215			3.9	15.2	2.4
10		13.6	210			4.1	15.4	2.1
11		12.6	205			4.2	15.4	2.1
12		12.0	205			4.2	15.4	2.2
13		12.2	205			4.2	15.4	2.2
14		12.4	205			4.0	15.3	2.1
15		12.2	210		(111)	3.5	15.0	2.1
16		11.6	225			3.2	>13.5	2.1
17	260	(12.2)			131	2.5	7.0	2.1
18	325	11.1			162	1.4	(6.7)	2.0
19	425	(9.2)						---
20	410	---						---
21	370	---					3.8	---
22	340	---					3.8	---
23	290	(9.8)					4.6	---

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 60*

Falkland Is. (51.7°S, 57.8°W) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	6.2						2.3
01	335	6.2						2.3
02	330	5.8						2.4
03	325	5.8						2.4
04	310	5.4						2.4
05	320	5.3						2.4
06	255	6.7			170	1.8		2.7
07	235	>8.6			130	2.4	2.6	2.9
08	235	>10.6	(250)		115	2.9		(3.0)
09	245	12.2	235		110	3.2	3.9	2.9
10	(240)	13.0	230		105	3.5	4.4	2.8
11	(245)	13.1	230		105	3.5	4.4	2.9
12	---	13.1	230		105	3.6	4.3	2.9
13	(250)	12.6	230		105	3.5	4.4	2.8
14	(245)	12.0	230		105	3.4	3.4	(2.9)
15	(245)	11.8	240		110	3.1	4.0	2.9
16	245	10.7	(240)		125	2.7	3.1	(2.8)
17	245	9.1			(135)	(2.2)	2.9	(3.1)
18	235	8.8					3.0	3.0
19	235	7.2					2.4	2.9
20	250	6.4						2.7
21	270	6.0						2.6
22	295	>6.6						2.5
23	335	6.6						2.3

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 61

Lulea, Sweden (65.6°N, 22.1°E) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	---					2.5	
01	300	---			---	---	2.8	
02	---	(5.0)	280	---	---	1.7	2.9	
03	(360)	(5.6)	260	---	---	2.2	2.8	
04	400	5.4	250	3.7	100	2.3	2.8	
05	360	5.7	240	4.0	110	2.7		
06	385	5.6	---	4.4	100	---		---
07	410	6.0	---	4.6	100	---		---
08	405	6.2	230	4.8	100	---		---
09	400	6.2	220	4.9	100	---	3.7	(2.5)
10	405	6.4	210	5.0	100	---	4.0	(2.6)
11	400	6.5	210	5.0	---	---	4.0	(2.6)
12	375	6.8	210	5.0	100	---		(2.6)
13	400	6.4	210	5.0	100	---		(2.65)
14	400	6.4	210	5.0	100	---		(2.7)
15	385	6.3	210	5.0	100	---		(2.7)
16	360	6.0	---	4.8	100	---		---
17	(330)	6.0	---	4.6	110	---		---
18	---	6.0	---	---	110	2.8	3.5	---
19	---	6.0	250	---	120	2.5	3.0	
20	---	6.0	260	---	140	2.2	2.5	
21	(250)	---	265	---	---	1.8	2.5	
22	280	---			---	1.6	2.4	
23	290	---			---	---	2.4	

Time: 15.0°E.
Sweep: 1.5 Mc to 10.0 Mc in 9 minutes, automatic operation.

Table 62

Delhi, India (28.6°N, 77.1°E) July 1956

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	360	7.9						2.80
01	360	7.8						2.80
02	---	---						----
03								
04	320	7.1						3.00
05	320	6.8						3.00
06	290	7.6						3.20
07	300	8.3						3.25
08	320	8.5						3.00
09	360	8.9						2.80
10	360	9.6						2.80
11	390	10.6						2.65
12	380	11.6						2.70
13	360	12.3						2.80
14	360	12.6						2.80
15	360	12.6						2.00
16	320	12.4						3.00
17	320	11.7						3.00
18	320	11.0						3.00
19	320	9.6						3.00
20	360	8.7						2.80
21	360	8.4						2.80
22	360	8.2						2.80
23	360	8.2						2.80

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 63

Ahmedabad, India (23.0°N, 72.6°E) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	305	7.4					3.2	2.65
01	285	7.2					3.2	2.75
02	280	6.8					3.2	2.70
03	275	6.7					3.2	2.75
04	275	6.3					3.2	2.75
05	260	6.0					3.2	2.85
06	250	6.9	250	3.9	120	2.0	3.7	3.05
07	260	0.1	230	4.4	110	2.8	4.0	3.05
08	280	8.4	225	4.8	107	3.3	4.2	2.90
09	315	9.0	225	5.2	105	3.6	4.3	2.65
10	370	10.2	225	5.5	105	3.9	4.6	2.50
11	400	11.3	225	5.7	105	4.0	4.2	2.50
12	380	12.7	240	5.6	105	4.0	4.3	2.60
13	400	13.4	240	5.8	105	4.0	4.0	2.60
14	375	14.3	230	5.5	105	4.0	4.8	2.60
15	360	14.5	250	5.5	105	3.7	5.2	2.65
16	340	14.4	230	5.2	107	3.4	4.2	2.80
17	310	13.6	250	4.8	110	3.0	4.1	2.75
18	280	13.1	250	4.0	120	2.4	4.0	2.80
19	275	12.2					3.8	2.80
20	285	10.5					3.5	2.65
21	310	8.5					3.2	2.50
22	325	7.8					3.2	2.50
23	325	7.3					3.2	2.55

Time: 75.0°E.
Sweep: 0.6 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 64

Bombay, India (19.0°N, 73.0°E) July 1956

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	270	6.4						3.35
07	300	7.0						3.10
08:30	330	8.9						2.95
09	360	9.4						2.80
10	390	10.2						2.65
11	390	10.8						2.65
12	400	11.2						2.60
13	440	11.5						2.50
14	420	11.3						2.55
15	420	11.3						2.55
16	420	11.3						2.55
17	390	11.0						2.65
18	360	10.6						2.80
19	360	9.7						2.80
20	360	(8.8)						2.80
21	330	7.4						2.95
22	300	6.9						3.10
23								

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 65

Madras, India (13.0°N, 80.2°E) July 1956

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	280	7.8						3.20
07	360	9.2						2.80
08	420	10.1						2.55
09	440	10.2						2.50
10	480	10.1						2.30
11	480	9.9						2.30
12	480	9.8						2.30
13	480	10.2						2.30
14	520	10.3						2.20
15	480	10.8						2.30
16	480	11.2						2.30
17	440	11.2						2.50
18	480	11.2						2.30
19	460	10.3						2.40
20	440	9.8						2.50
21	440	9.0						2.50
22	460	8.6						2.40
23								

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 66

Tiruchy, India (10.8°N, 78.8°E) July 1956

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	320	7.2						3.00
07	360	9.3						2.80
08	400	10.2						2.60
09	480	10.4						2.30
10	480	10.4						2.30
11	520	10.4						2.20
12	520	10.4						2.20
13	520	10.4						2.20
14	520	10.5						2.20
15	520	10.1						2.20
16	520	10.2						2.20
17	400	10.2						2.30
18	480	9.8						2.30
19	480	9.4						2.30
20	(480)	(9.1)						(2.30)
21:30	440	9.0						2.50
22	(400)	(8.9)						(2.60)
23								

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 67

Kodaikanal, India (10.2°N, 77.5°E) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	8.1						2.75
01	305	7.2						2.80
02	295	6.6						2.90
03	270	6.0						3.00
04	260	5.3						3.20
05	250	4.2						3.30
06	270	6.8						3.00
07	255	9.0	250	---	---	---		2.85
08	---	10.2	235	---	115	3.5		2.60
09	325	10.2	220	---	---	---	7.7	2.35
10	(395)	9.7	220	---	---	---	9.0	2.25
11	360	9.5	220	---	---	---	9.6	2.25
12	400	9.4	215	---	---	---	10.0	2.20
13	(400)	9.5	215	---	---	---	10.1	2.20
14	(430)	9.6	215	---	---	---	10.0	2.20
15	(410)	10.1	220	---	115	---	9.0	2.30
16	---	10.4	235	---	120	---	7.6	2.30
17	260	10.8	---	---	120	2.9	6.0	2.40
18	295	11.0					3.8	2.45
19	350	10.3						2.35
20	400	9.1						2.40
21	400	8.9						2.40
22	380	8.8						2.50
23	340	8.6						2.65

Time: 75.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 68*

Ibadan, Nigeria (7.4°N, 4.0°E) June 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	400	---					1.6	---
01	400	---					1.4	---
02	380	---					3.2	---
03	370	---					5.6	---
04	305	(4.4)					4.5	---
05	255	(4.0)					5.7	3.0
06	250	(7.7)			138	2.2	>7.5	3.1
07		10.0	230		119	3.0	8.5	3.0
08		11.6	225		122	3.5	>9.9	3.0
09		12.2	215		122	3.8	13.0	2.8
10		12.2	210			4.0	14.0	2.4
11		11.8	200			4.1	14.6	2.3
12		10.6	205			4.1	14.6	2.3
13		10.4	200			4.0	14.2	2.3
14		10.5	200			3.8	13.5	2.3
15		11.0	205		116	3.6	13.0	2.3
16		11.2	225		115	3.0	10.2	2.3
17		11.2	250		129	2.7	6.4	2.3
18	275	11.2	260		139	1.8	6.0	2.3
19	335	10.4						2.2
20	370	9.0						(2.0)
21	410	---						---
22	430	---					1.6	---
23	400	---					1.4	---

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, wich are median values.

Table 69*

Ibadan, Nigeria (7.4°N, 4.0°E) May 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	345	---						---
01	330	(6.9)						---
02	305	(6.5)					2.5	---
03	280	(6.0)					3.9	(3.1)
04	250	(5.7)					3.8	3.2
05	240	(3.9)					6.0	3.3
06	240	(8.1)			130	2.2	(6.6)	3.0
07	235	11.2	240		117	3.1	8.8	3.1
08		12.6	225		116	3.5	10.3	3.0
09		13.4	220		112	3.8	13.6	2.7
10		13.7	210		110	4.0	14.0	2.4
11		13.2	205		110	4.1	14.0	2.2
12		12.2	200		110	4.1	14.0	2.2
13		11.8	200		110	4.0	14.0	2.2
14		11.7	200		110	3.8	13.8	2.2
15		11.9	205		109	3.5	11.4	2.2
16		12.2	220		110	3.2	10.8	2.2
17		12.3	255		121	2.6	6.0	2.2
18	300	>11.9			145	1.7	4.6	2.3
19	365	10.4						2.0
20	385	(9.8)						---
21	390	(8.9)						---
22	390	(9.5)						---
23	365	(8.9)						---

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 70

Poitiers, France (46.6°N, 0.3°E) April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	6.5					1.9	(2.55)
01	305	6.4						----
02	305	6.2						2.55
03	<300	5.7						2.60
04	305	5.2			---	---	1.9	2.60
05	290	4.8	---	1.8	---	E	2.4	2.70
06	255	5.9	255	2.6	120	2.2	2.6	3.00
07	265	6.5	240	4.0	110	2.8		3.00
08	300	7.2	230	4.6	105	3.2	3.2	2.90
09	310	8.3	235	4.8	105	3.4	3.6	(2.80)
10	305	8.8	230	5.2	100	3.5	3.8	(2.70)
11	320	10.0	230	5.3	100	3.6	3.7	(2.80)
12	315	9.8	225	5.3	100	3.6	3.7	----
13	300	9.9	225	5.4	105	3.6	3.6	(2.75)
14	300	10.0	235	5.1	105	3.5	3.6	----
15	295	8.7	235	5.0	110	3.4	3.5	(2.85)
16	265	9.0	240	4.5	110	3.2	3.4	(2.80)
17	260	8.6	250	4.0	115	2.8	3.0	----
18	255	(8.4)	250	2.4	<120	2.1	2.6	----
19	250	(8.2)	---	1.6	---	E	2.2	
20	250	(7.2)			---	---	2.2	
21	260	6.8					2.0	----
22	290	6.6						----
23	300	6.4						(2.45)

Time: 0.0°.
Sweep: 1.6 Mc to 16.8 Mc in 1 minute.

Table 71

Casablanca, Morocco (33.6°N, 7.6°W) April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<300	8.40						2.50
01	<300	8.35						2.50
02	<295	8.40						2.60
03	<275	7.90						2.70
04	<280	7.20						2.60
05	<275	6.60						2.60
06	265	6.70	---	----	---	----		2.85
07	250	8.00	250	2.90	120	2.40		3.10
08	250	8.85	235	4.30	115	3.00		3.05
09	250	9.45	230	4.70	110	3.35		2.90
10	295	10.50	225	(5.30)	110	3.60		2.80
11	330	>11.00	230	----	110	3.80		2.70
12	335	>12.00	235	6.55	110	(3.90)		2.75
13	320	12.30	230	(5.90)	115	(3.90)		2.75
14	320	12.60	235	(6.10)	115	(3.80)		2.80
15	320	>12.50	240	5.65	110	3.70		2.80
16	305	12.10	240	(5.50)	110	3.40		(2.80)
17	285	12.10	245	----	115	3.00	4.0	2.90
18	260	>11.00	260	(3.70)	125	2.30	3.6	(2.90)
19	250	10.90			---	----	2.6	(2.95)
20	<245	>8.60					1.9	2.70
21	<290	8.50					2.1	2.50
22	<315	8.65					2.2	2.55
23	<310	8.50					2.0	2.50

Time: 0.0°.
Sweep: 1.6 Mc to 16.0 Mc in 1 minute 15 seconds.

Table 72

Poitiers, France (46.6°N, 0.3°E) March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	5.2						(2.50)
01	300	5.2						(2.55)
02	290	4.9					1.9	(2.65)
03	285	4.9						2.65
04	275	4.8						(2.60)
05	270	4.3			---	---		2.70
06	265	4.8	225	1.8	---	E	2.0	2.90
07	245	6.6	220	2.4	115	2.2		3.10
08	245	7.3	230	3.6	110	2.8		(2.85)
09	245	8.9	225	4.2	105	3.1	3.3	(3.10)
10	250	(9.1)	225	4.8	100	3.3	3.5	----
11	250	9.9	215	4.8	100	3.4		----
12	250	(10.6)	220	5.0	100	3.5		----
13	255	(10.8)	225	4.8	105	3.5		----
14	250	10.4	230	4.8	105	3.4		----
15	250	10.3	225	4.3	105	3.3		----
16	250	(10.0)	235	3.8	110	3.0		----
17	250	---	250	(3.0)	115	2.4	2.7	
18	235	(9.0)	---	1.8	---	E	2.1	
19	225	(7.2)			---	E	1.7	
20	230	6.9						
21	250	6.8						----
22	265	6.3						----
23	<310	5.8						----

Time: 0.0°.
Sweep: 1.6 Mc to 16.8 Mc in 1 minute.

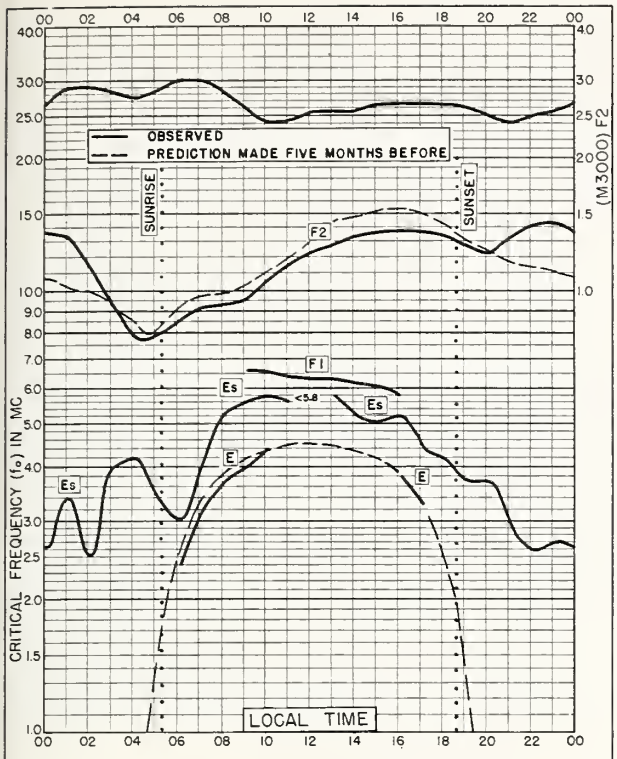


Fig. 1. FORMOSA, CHINA
25.0°N, 121.5°E JULY 1957

NBS 503

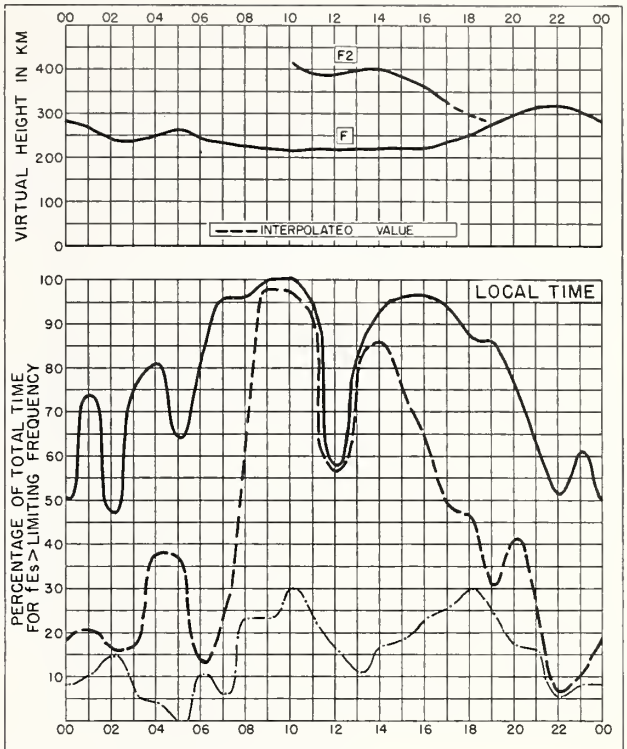


Fig. 2. FORMOSA, CHINA JULY 1957

NBS 490

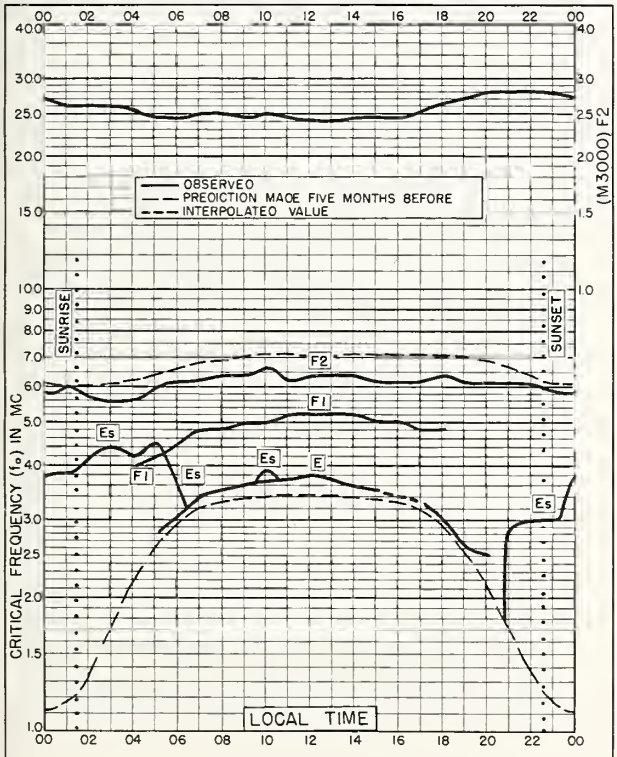


Fig. 3. FAIRBANKS, ALASKA
64.9°N, 147.8°W JUNE 1957

NBS 503

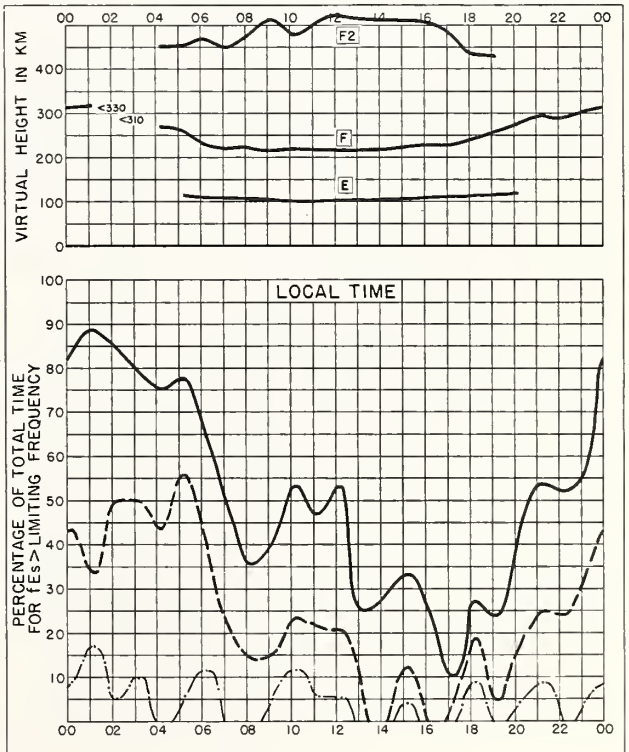


Fig. 4. FAIRBANKS, ALASKA JUNE 1957

NBS 490

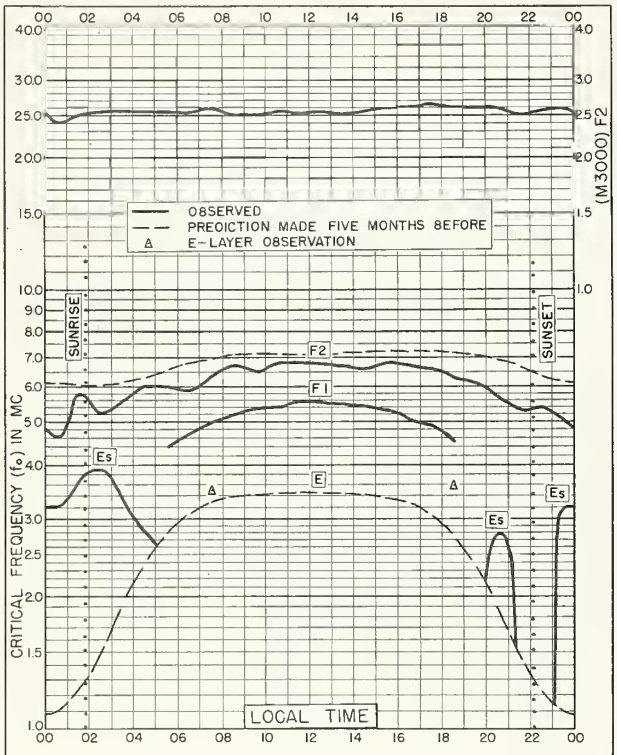


Fig. 5. REYKJAVIK, ICELAND
64.1°N, 21.8°W JUNE 1957

NBS 503

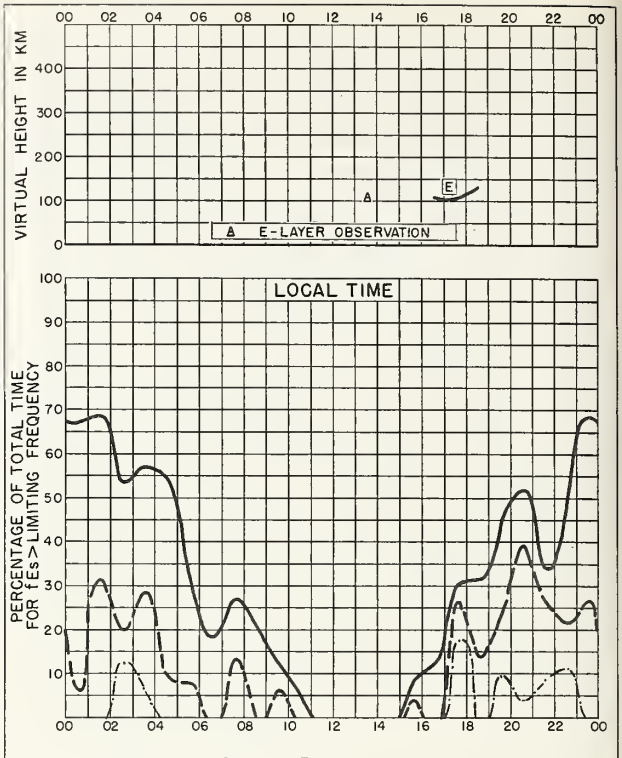


Fig. 6. REYKJAVIK, ICELAND JUNE 1957

NBS 490

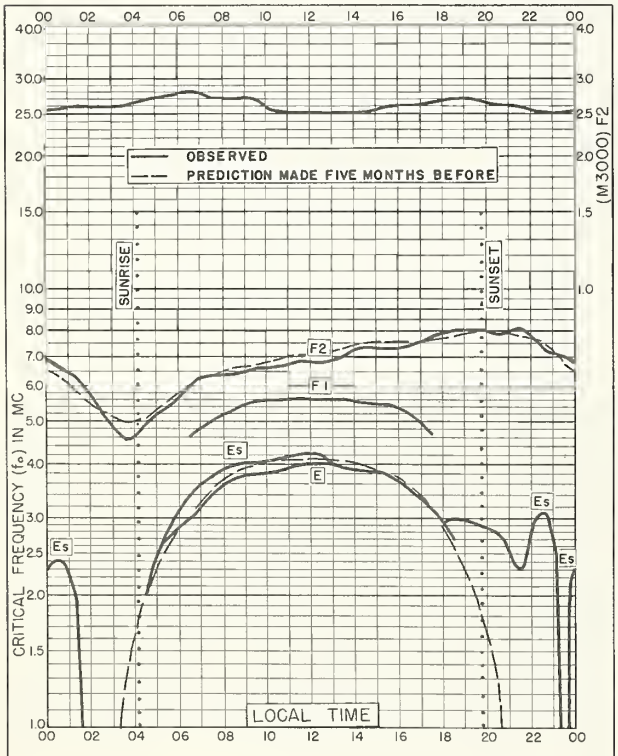


Fig. 7. ST. JOHNS, NEWFOUNDLAND
47.6°N, 52.7°W JUNE 1957

NBS 503

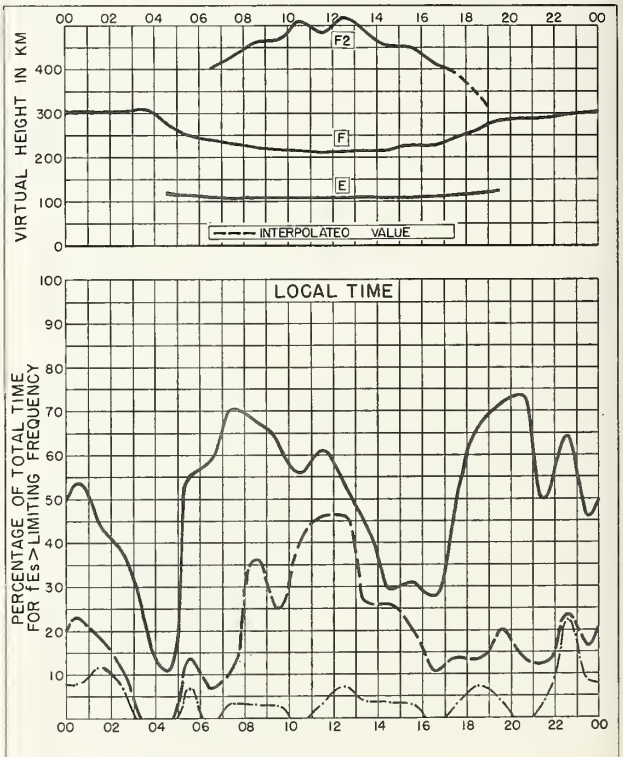


Fig. 8. ST. JOHNS, NEWFOUNDLAND JUNE 1957

NBS 490

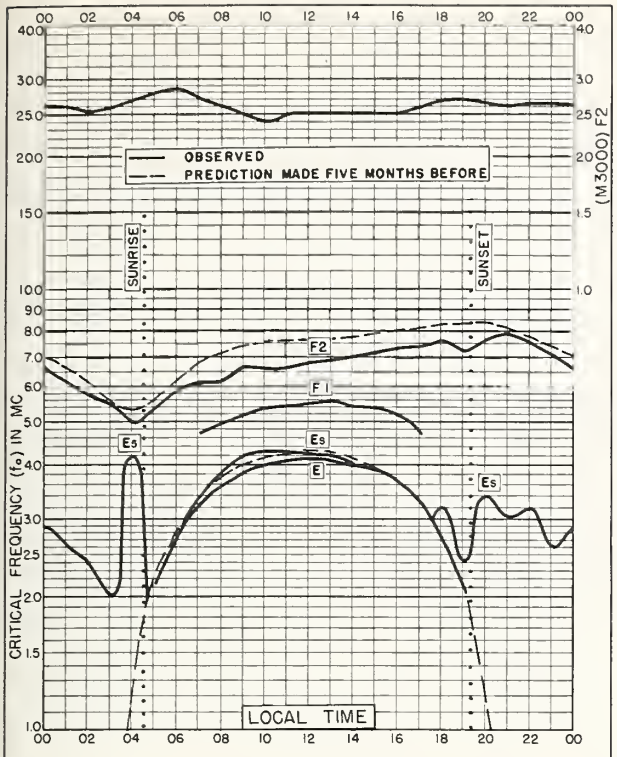


Fig. 9. FT. MONMOUTH, NEW JERSEY
40.3°N, 74.1°W JUNE 1957

NBS 503

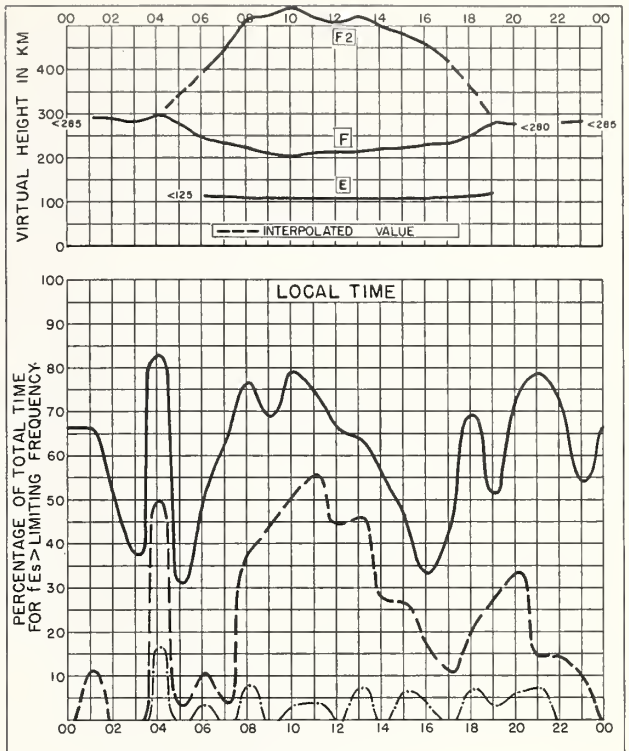


Fig. 10. FT. MONMOUTH, NEW JERSEY JUNE 1957

NBS 490

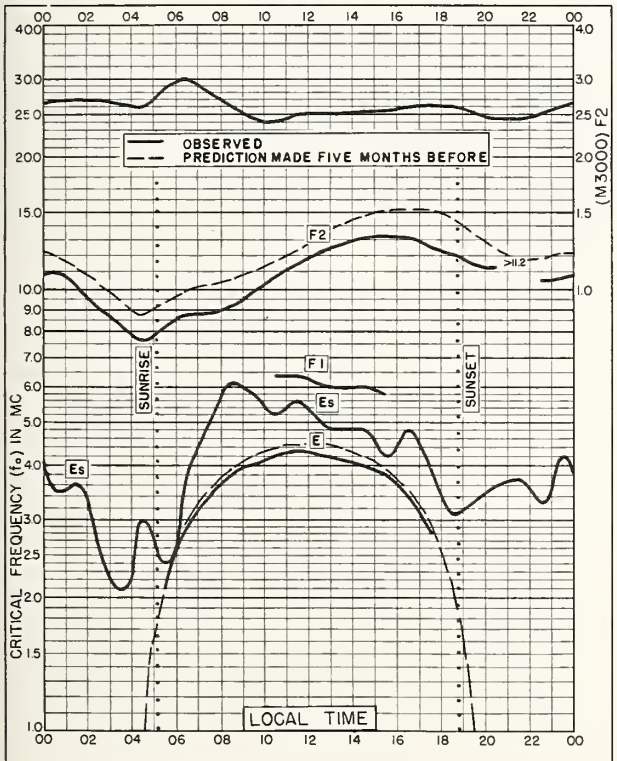


Fig. 11. OKINAWA I.
26.3°N, 127.8°E JUNE 1957

NBS 503

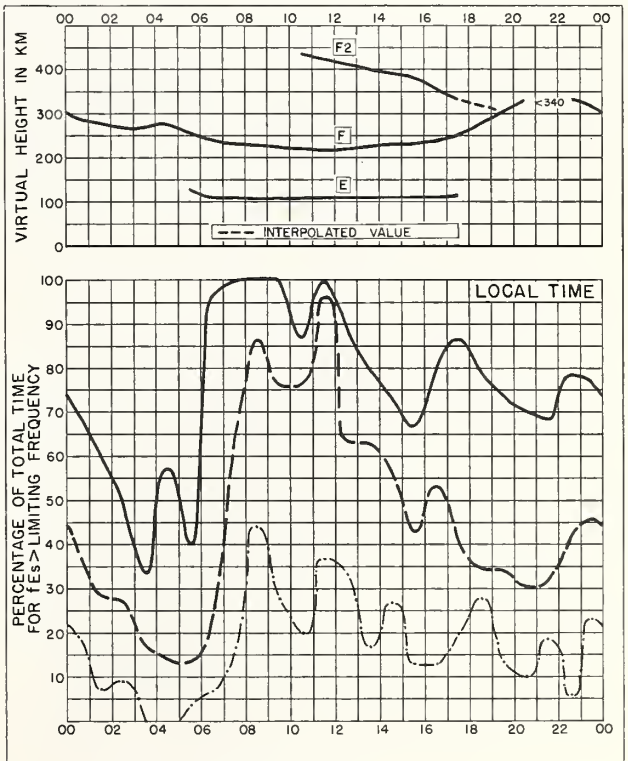


Fig. 12. OKINAWA I. JUNE 1957

NBS 490

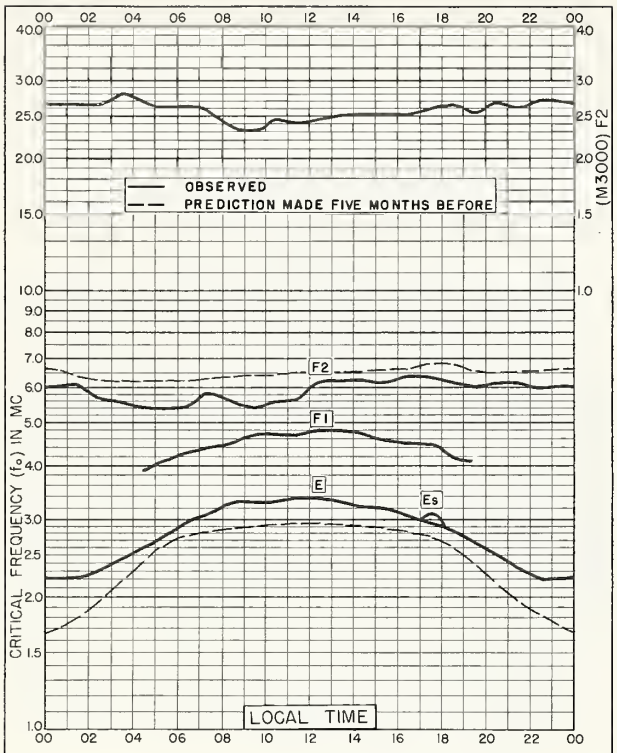


Fig. 13. THULE, GREENLAND
76.6°N, 68.7°W MAY 1957

NBS 503

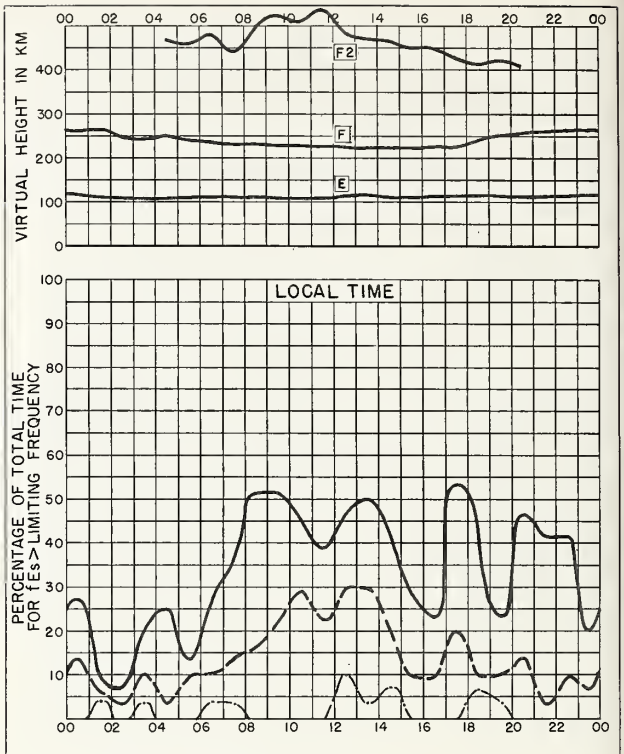


Fig. 14. THULE, GREENLAND MAY 1957

NBS 490

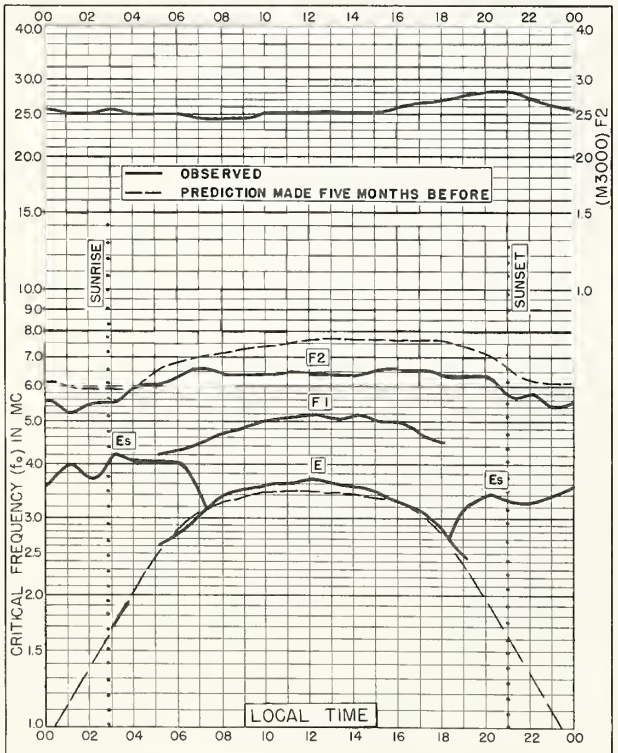


Fig. 15. FAIRBANKS, ALASKA
64.9°N, 147.8° W MAY 1957

NBS 503

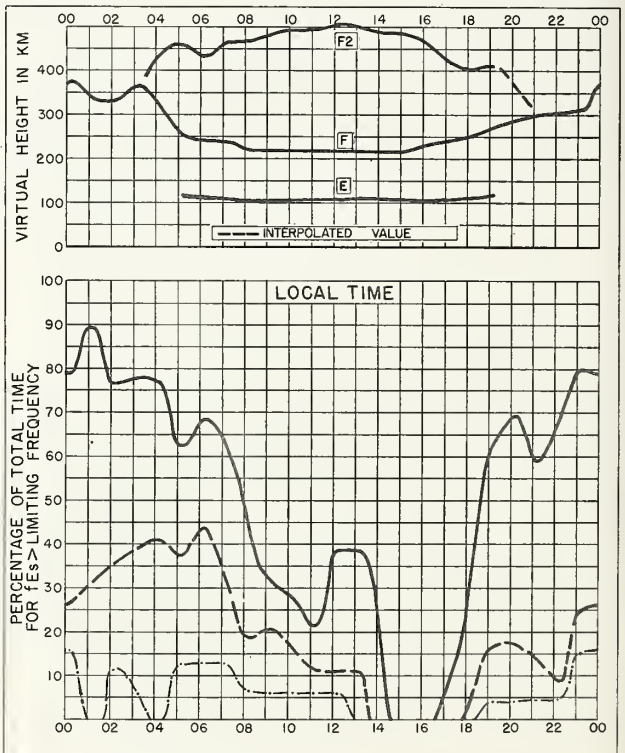


Fig. 16. FAIRBANKS, ALASKA MAY 1957

NBS 490

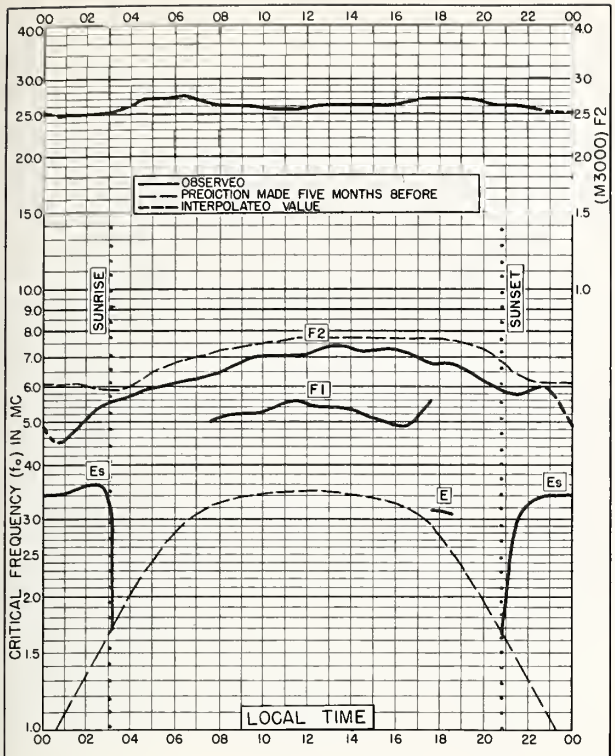


Fig. 17. REYKJAVIK, ICELAND
64.1°N, 21.8°W MAY 1957

NBS 503

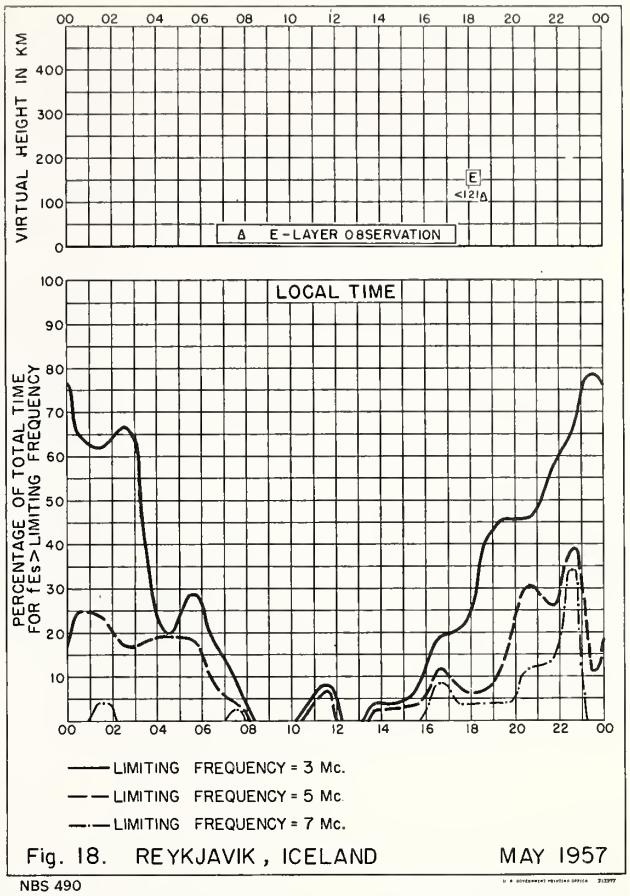


Fig. 18. REYKJAVIK, ICELAND MAY 1957

NBS 490

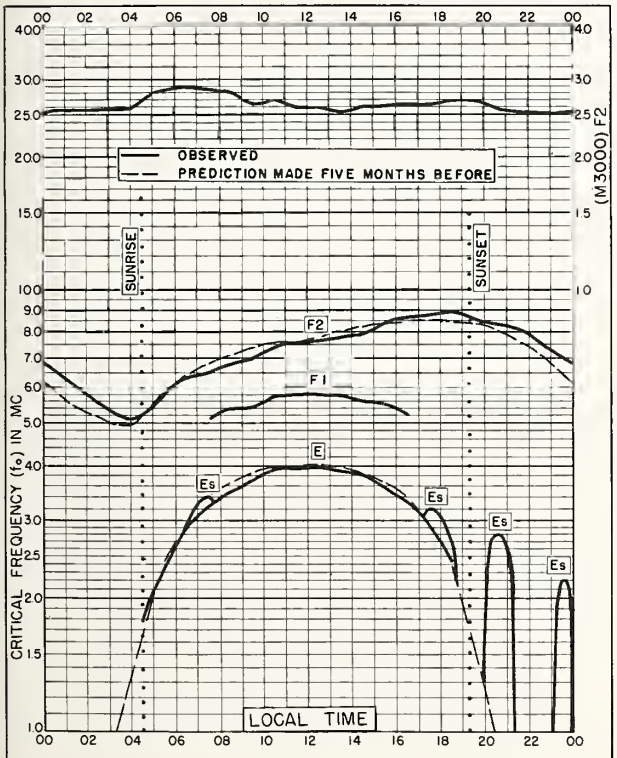


Fig. 19. ST. JOHNS, NEWFOUNDLAND
47.6°N, 52.7°W MAY 1957

NBS 503

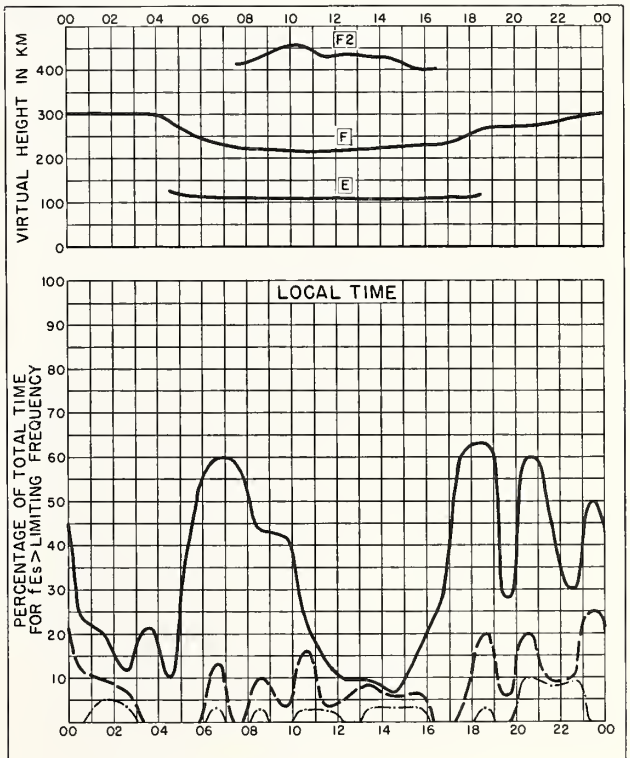


Fig. 20. ST. JOHNS, NEWFOUNDLAND MAY 1957

NBS 490

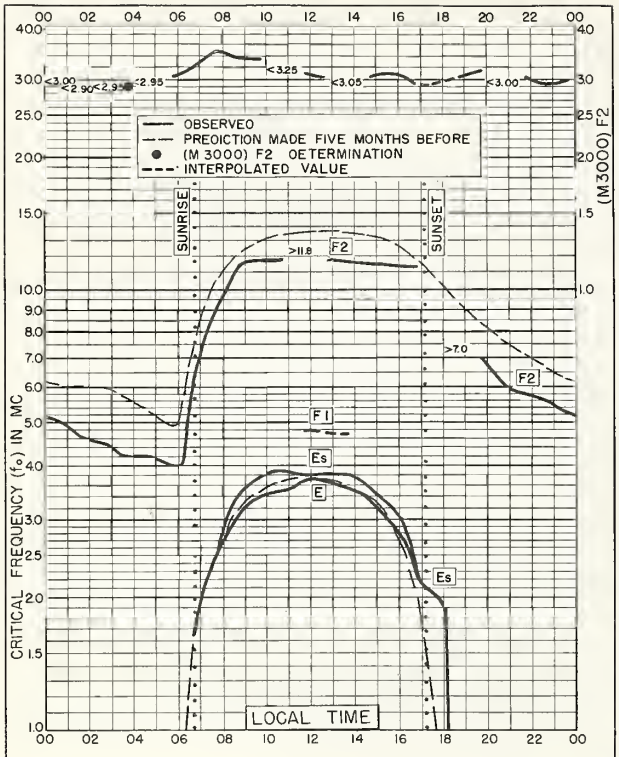


Fig. 21. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E MAY 1957

NBS 503

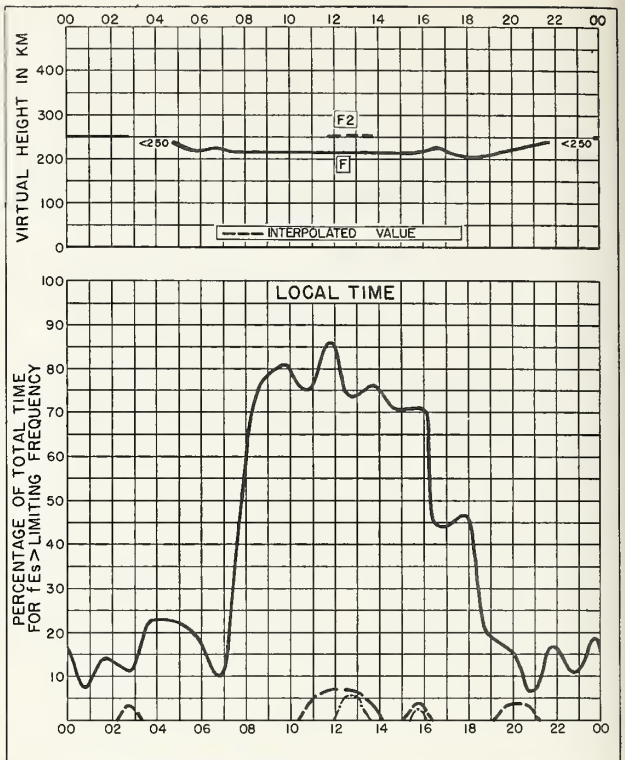


Fig. 22. WATHEROO, W. AUSTRALIA MAY 1957

NBS 490

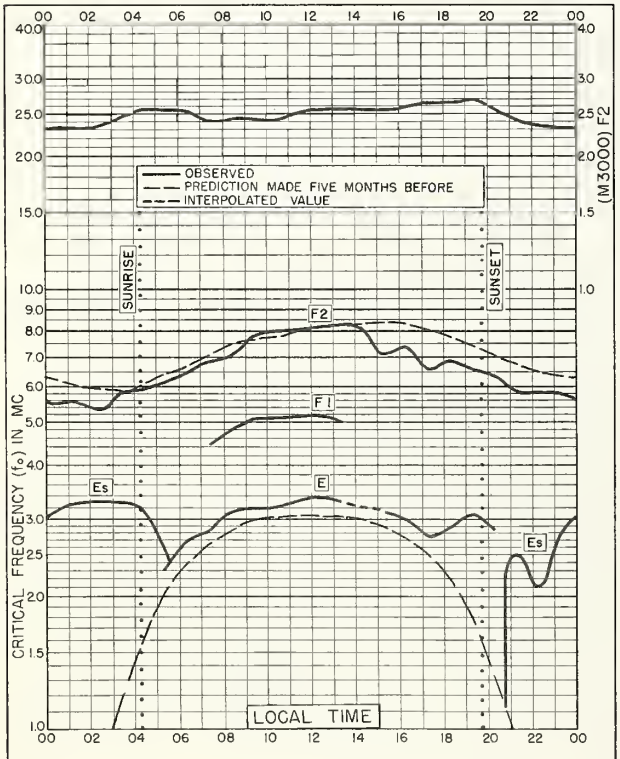


Fig. 23. TROMSO, NORWAY
69.7°N, 19.0°E APRIL 1957

NBS 503

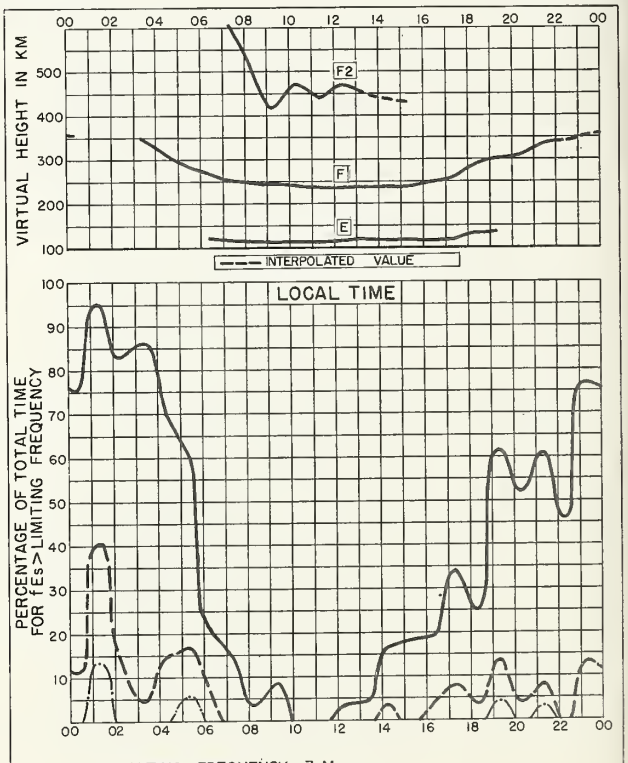


Fig. 24. TROMSO, NORWAY APRIL 1957

NBS 490

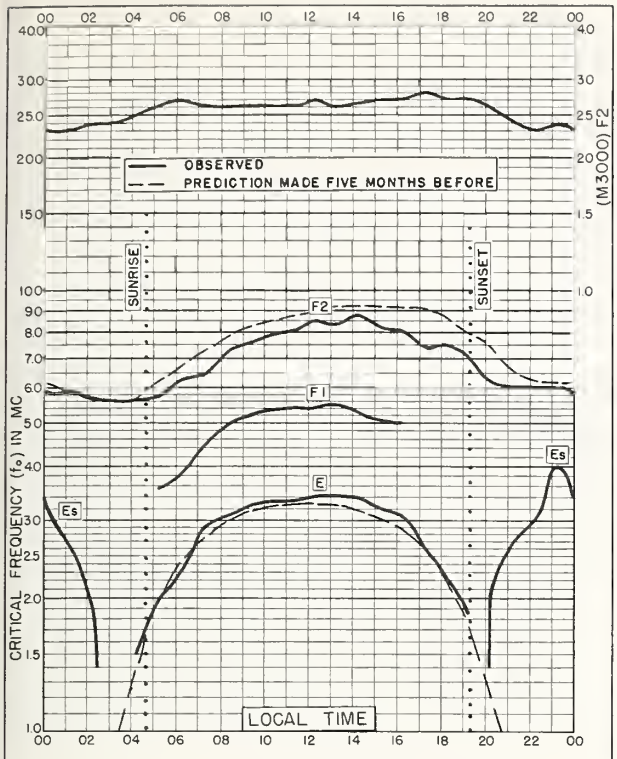


Fig. 25. LYCKSELE, SWEDEN
64.6°N, 18.8°E APRIL 1957

NBS 503

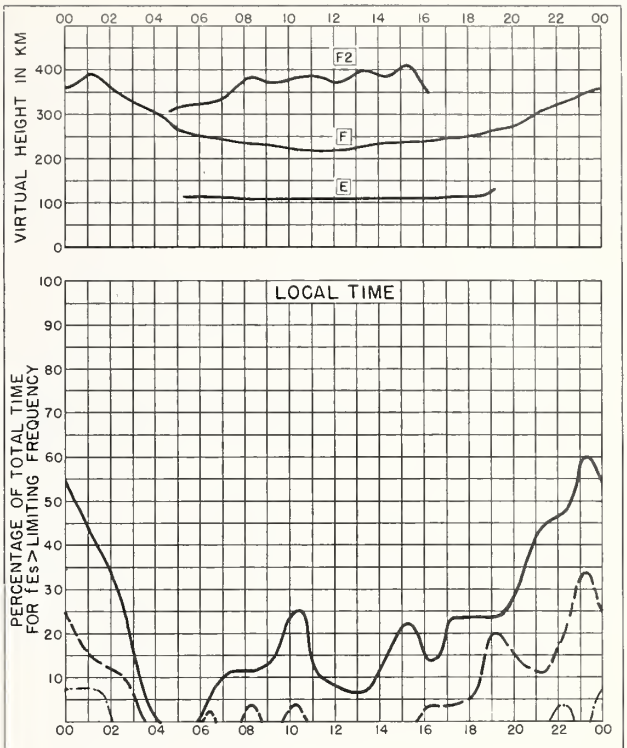


Fig. 26. LYCKSELE, SWEDEN APRIL 1957

NBS 490

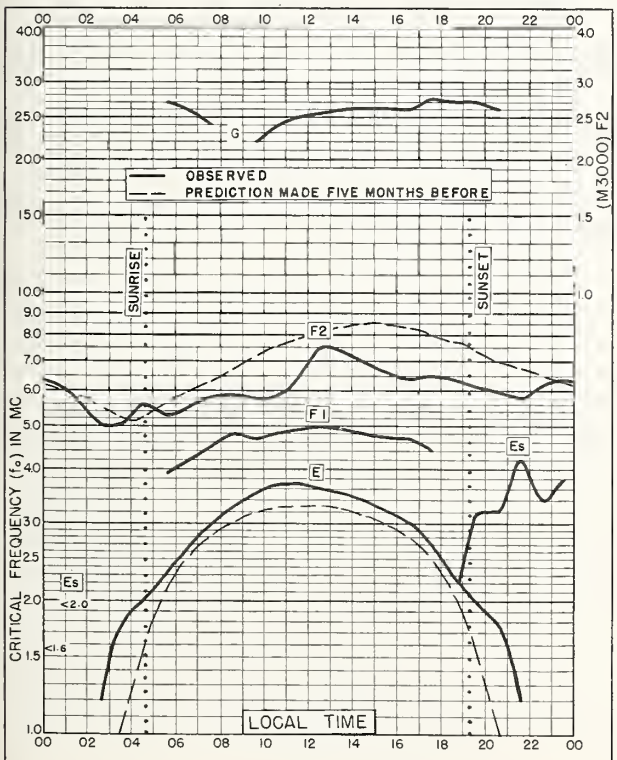


Fig. 27. BAKER LAKE, CANADA
64.3°N, 96.0°W APRIL 1957

NBS 503

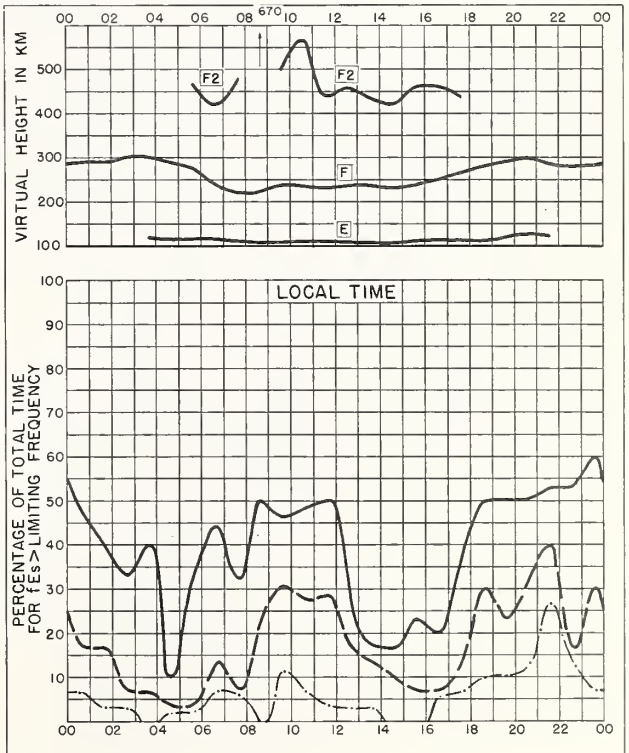


Fig. 28. BAKER LAKE, CANADA APRIL 1957

NBS 490

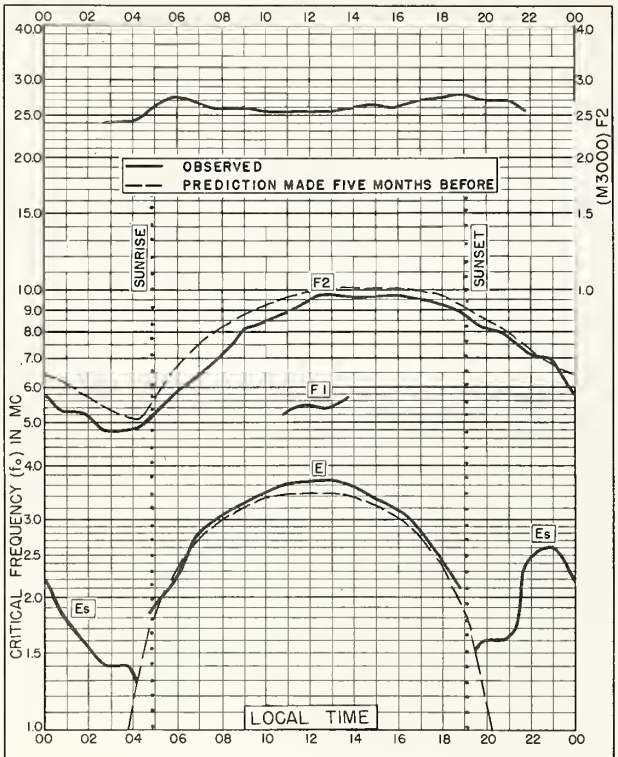


Fig. 29. OSLO, NORWAY
60.0°N, 11.1°E APRIL 1957

NBS 503

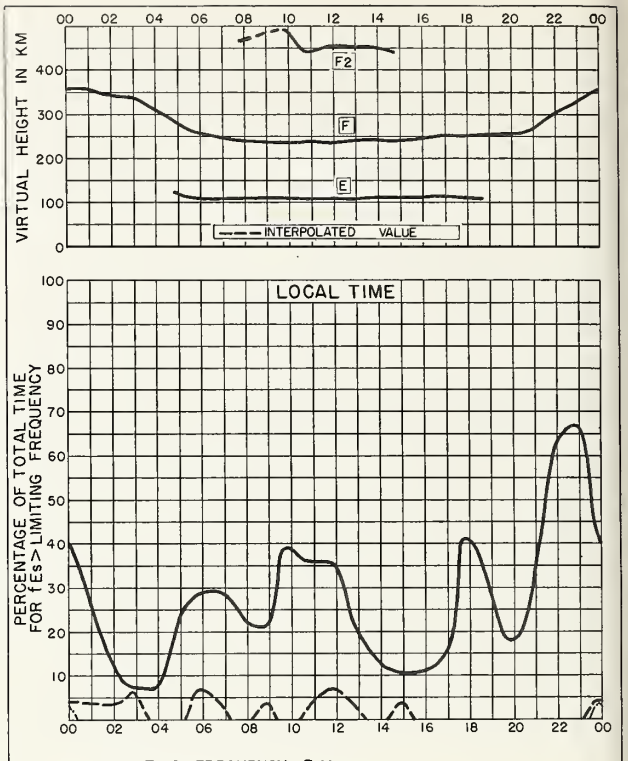


Fig. 30. OSLO, NORWAY APRIL 1957

NBS 490

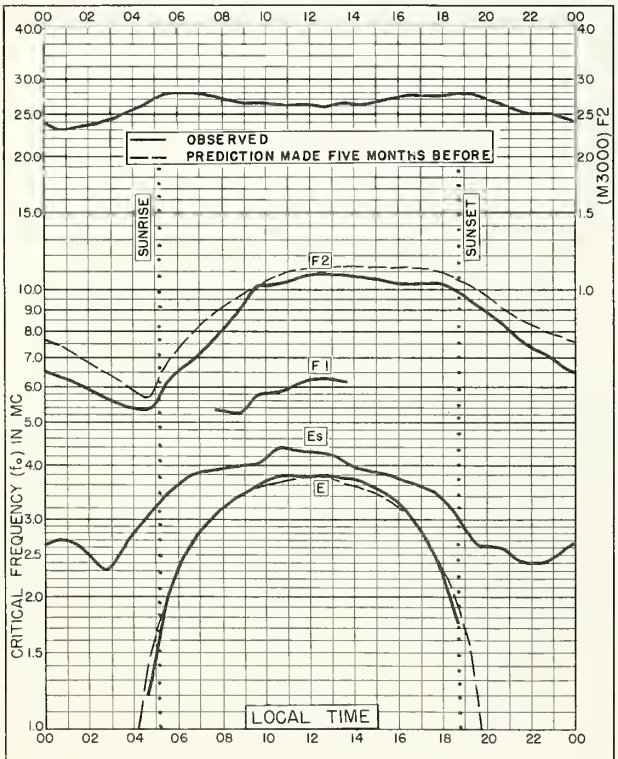


Fig. 31. LINDAU/HARZ, GERMANY
51.6°N, 10.1°E APRIL 1957

NBS 503

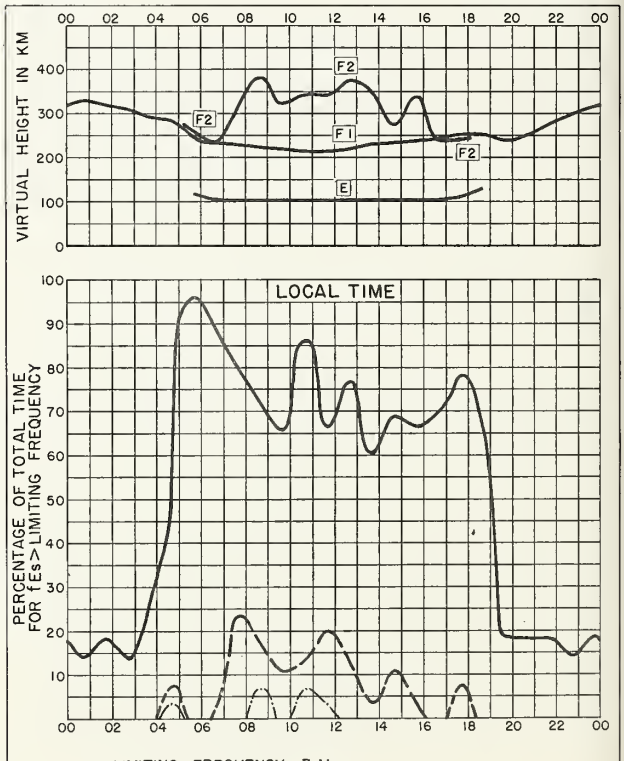


Fig. 32. LINDAU/HARZ, GERMANY APRIL 1957

NBS 490

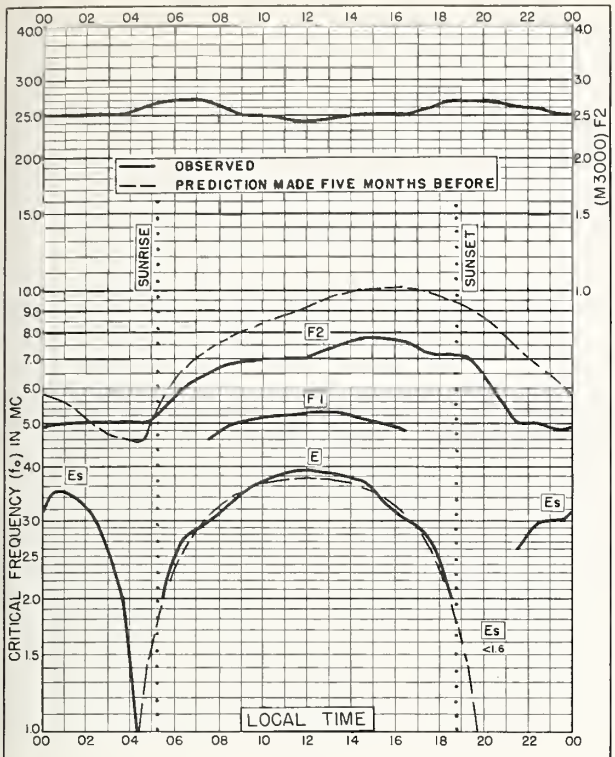


Fig. 33. WINNIPEG, CANADA
49.9°N, 97.4°W APRIL 1957

NBS 503

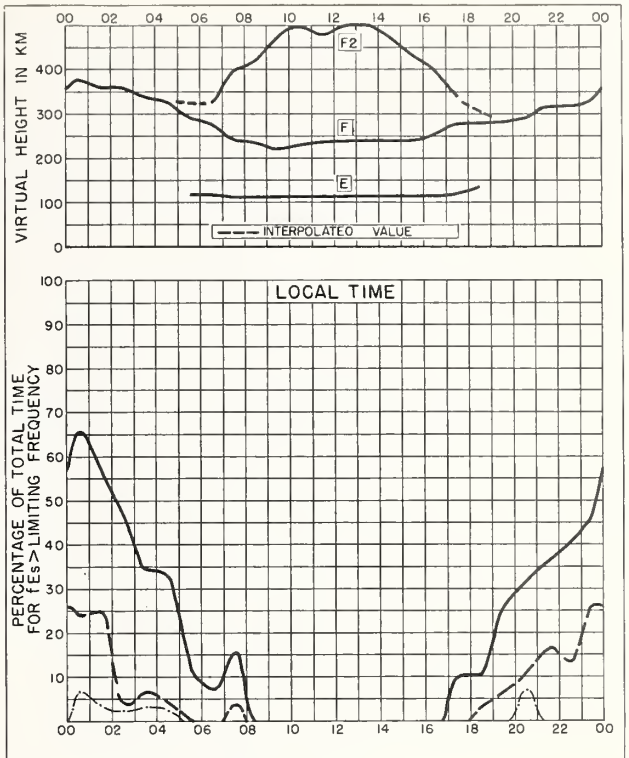


Fig. 34. WINNIPEG, CANADA APRIL 1957

NBS 490

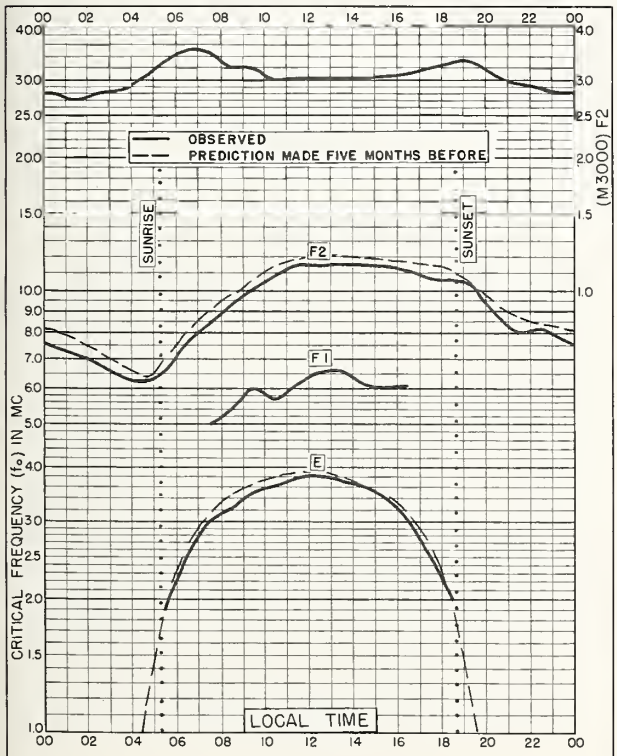


Fig. 35. SCHWARZENBURG, SWITZERLAND
46.8°N, 7.3°E APRIL 1957

NBS 503

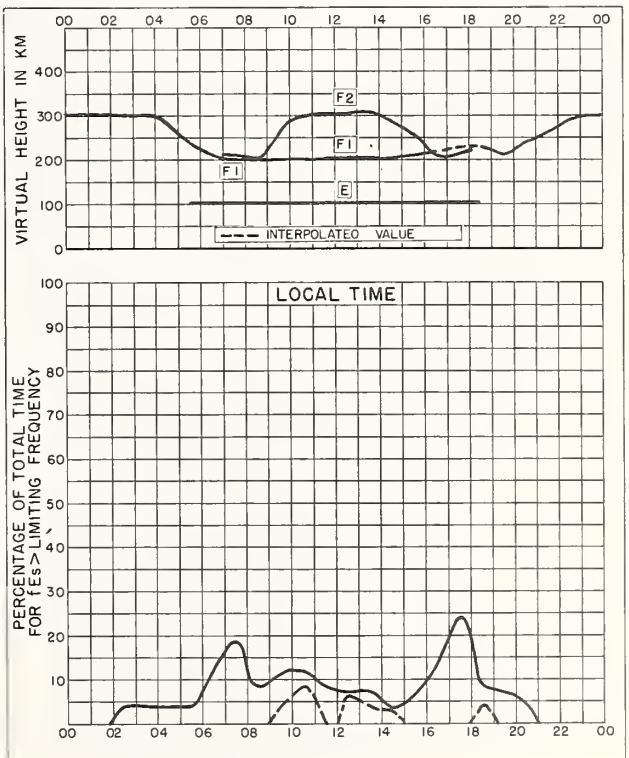


Fig. 36. SCHWARZENBURG, SWITZERLAND APRIL 1957

NBS 490

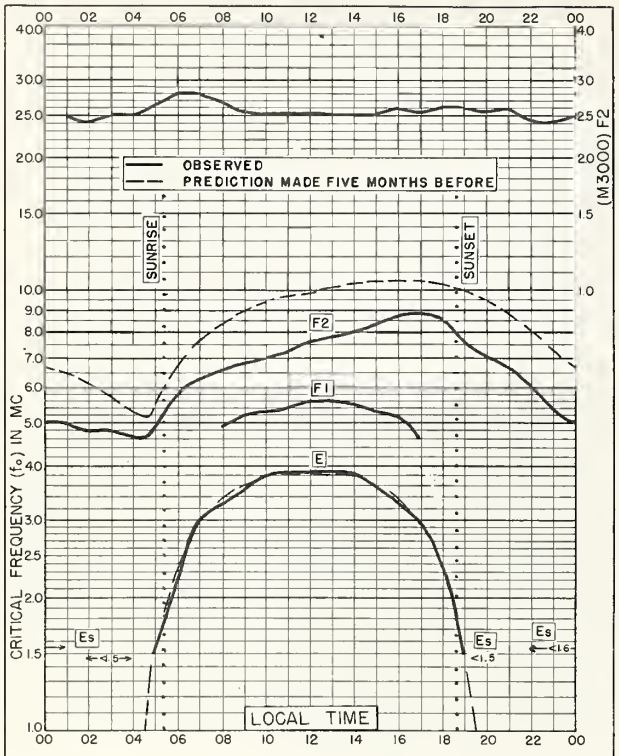


Fig. 37. OTTAWA, CANADA
45.4°N, 75.9°W APRIL 1957

NBS 503

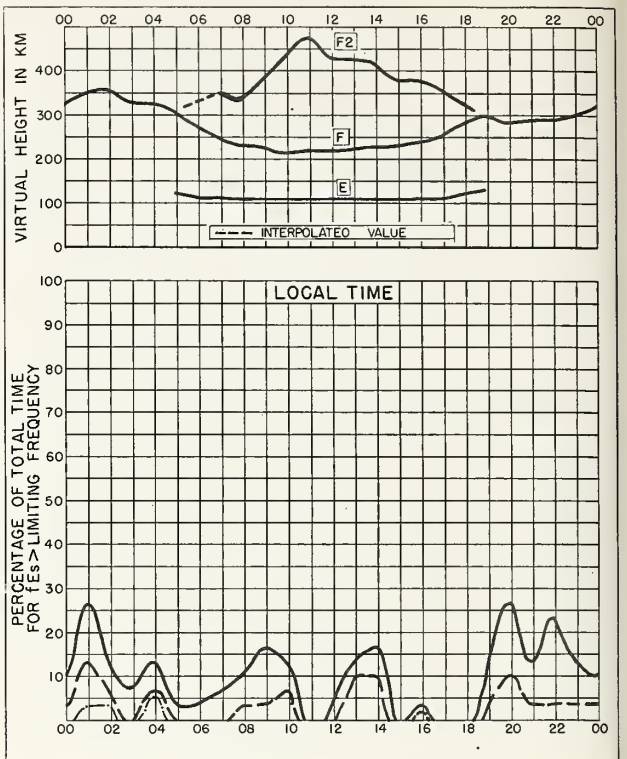


Fig. 38. OTTAWA, CANADA APRIL 1957

NBS 490

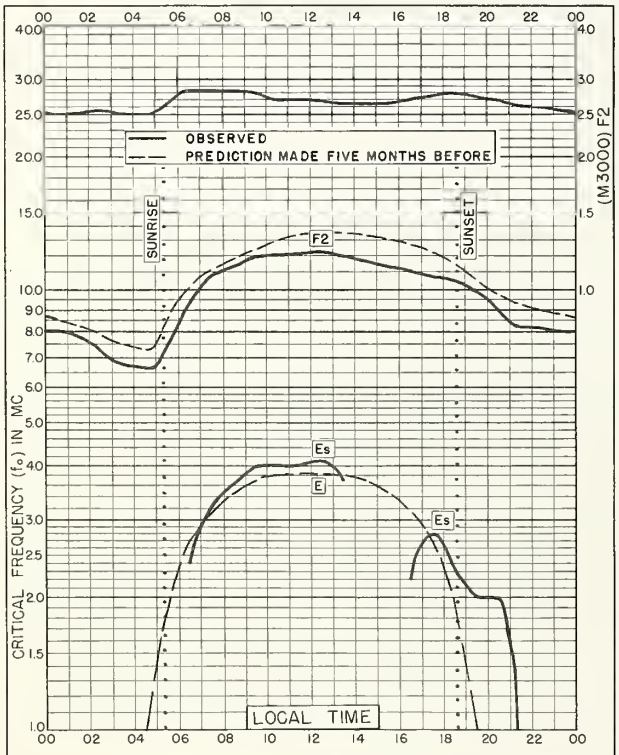


Fig. 39. WAKKANAI, JAPAN
45.4°N, 141.7°E APRIL 1957

NBS 503

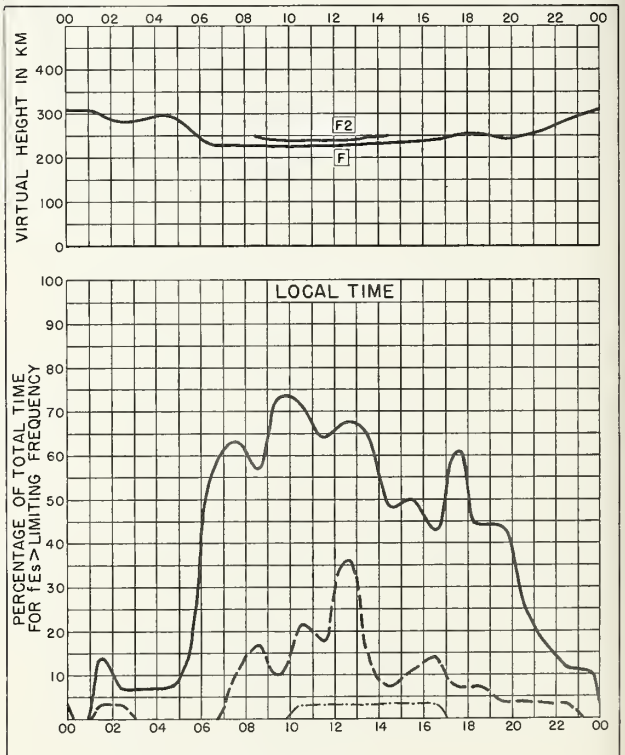


Fig 40. WAKKANAI, JAPAN APRIL 1957

NBS 490

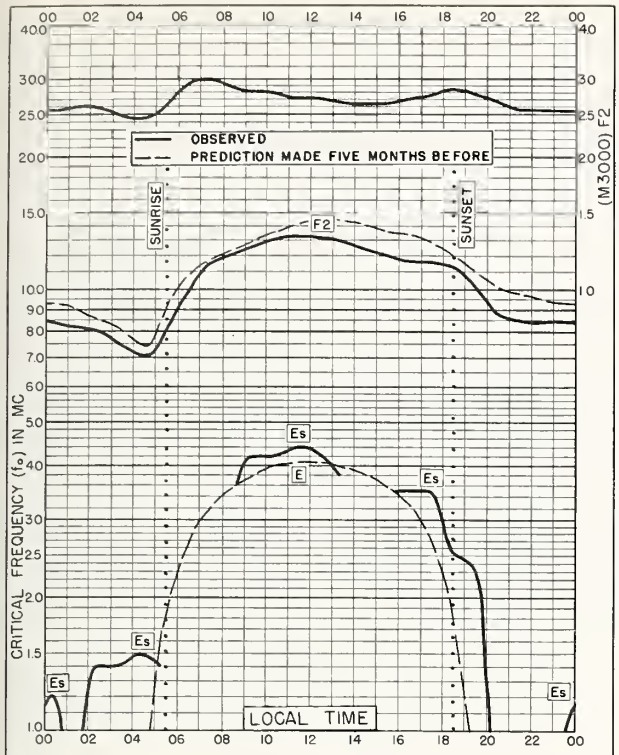


Fig. 41. AKITA, JAPAN
39.7°N, 140.1°E APRIL 1957

NBS 503

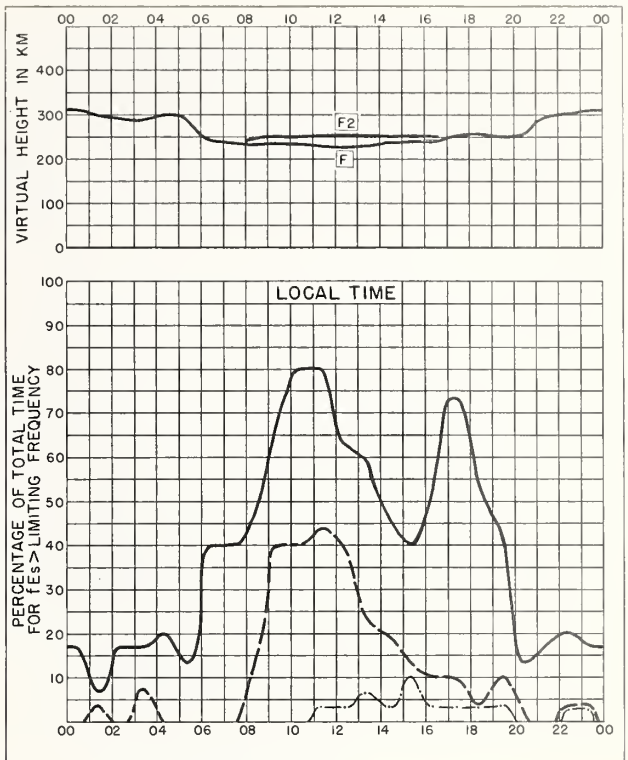


Fig. 42. AKITA, JAPAN APRIL 1957

NBS 490

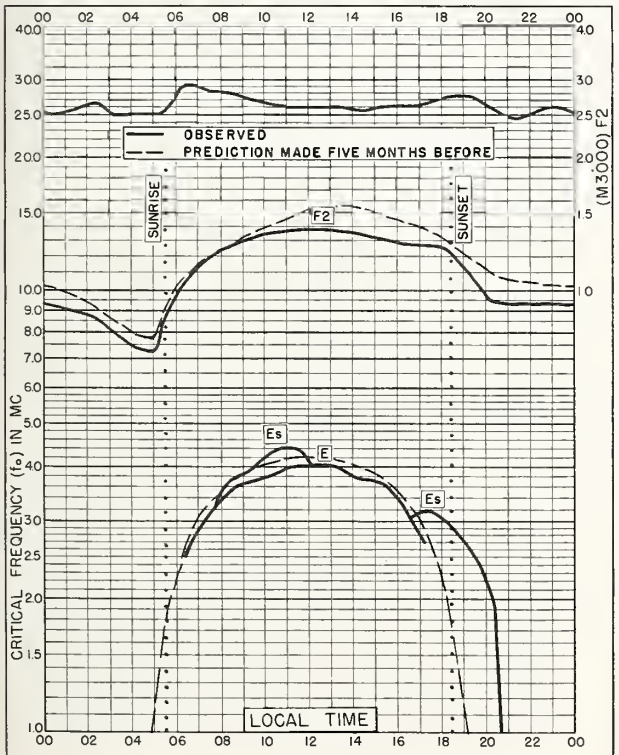


Fig. 43. TOKYO, JAPAN
35.7°N, 139.5°E APRIL 1957

NBS 503

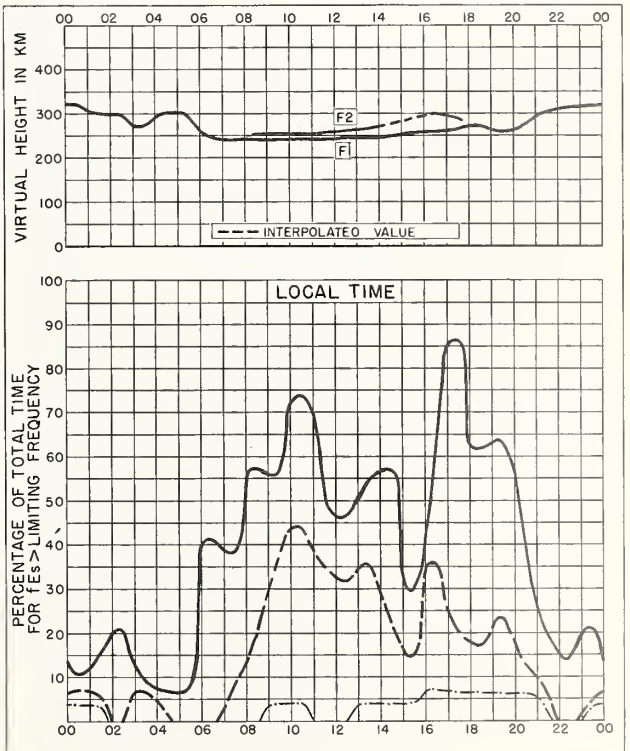


Fig. 44. TOKYO, JAPAN APRIL 1957

NBS 490

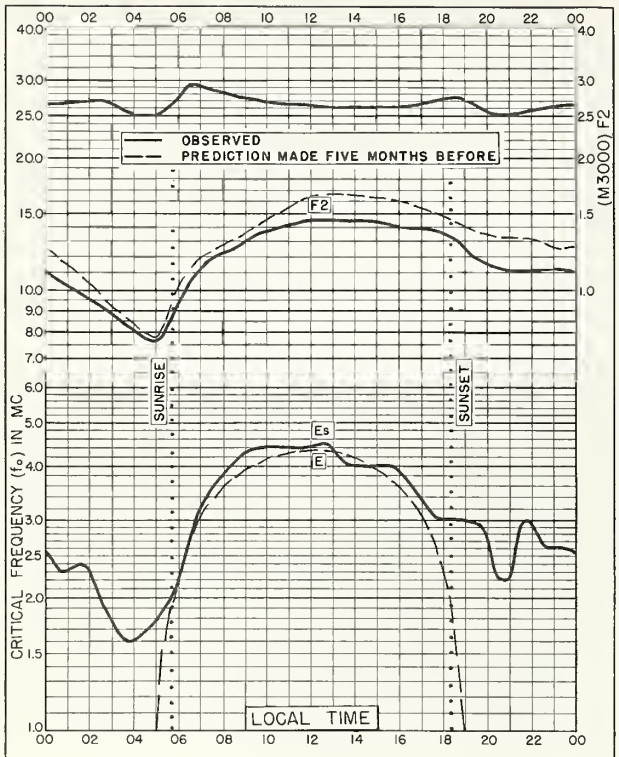


Fig. 45. YAMAGAWA, JAPAN
31.2°N, 130.6°E APRIL 1957

NBS 503

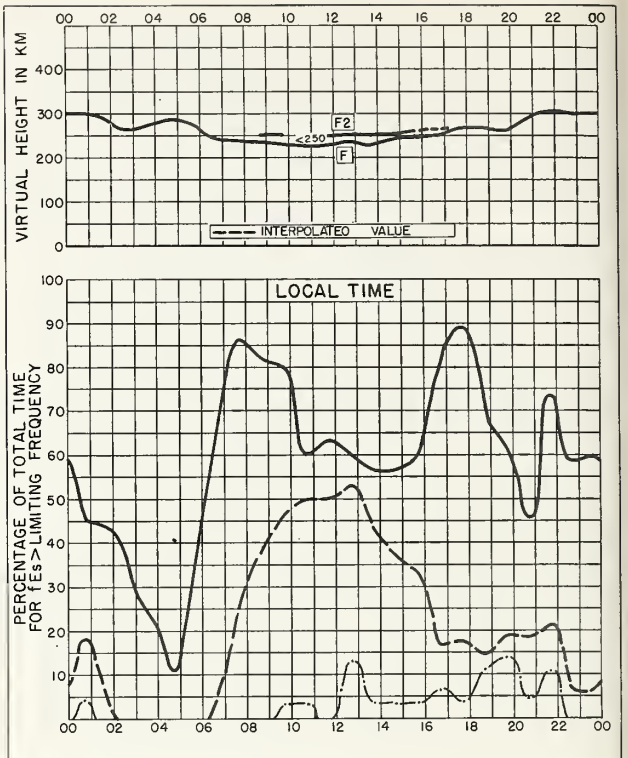


Fig. 46. YAMAGAWA, JAPAN APRIL 1957

NBS 490

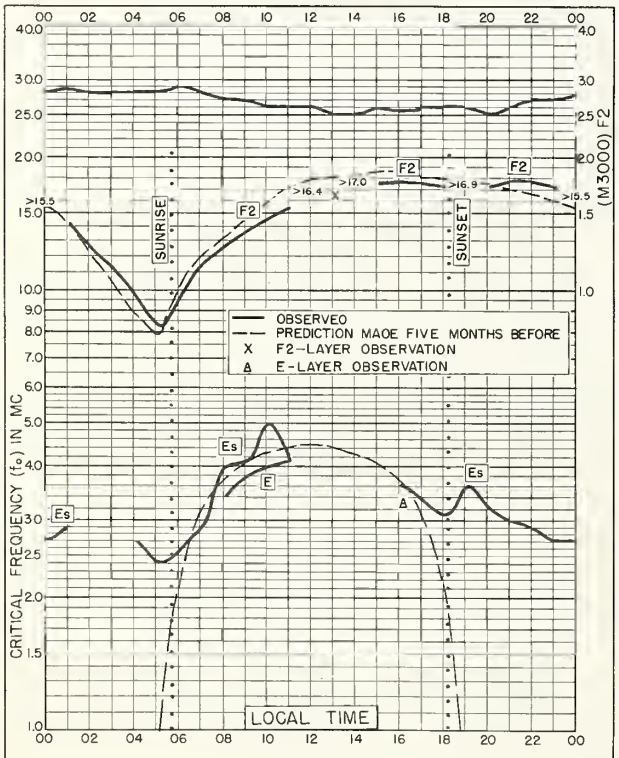


Fig. 47. FORMOSA, CHINA
25.0°N, 121.5°E APRIL 1957

NBS 503

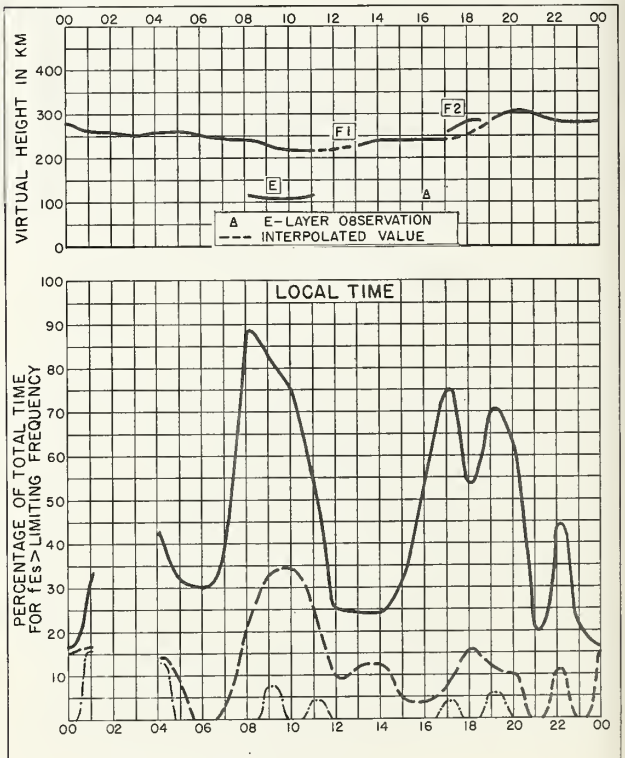


Fig. 48. FORMOSA, CHINA APRIL 1957

NBS 490

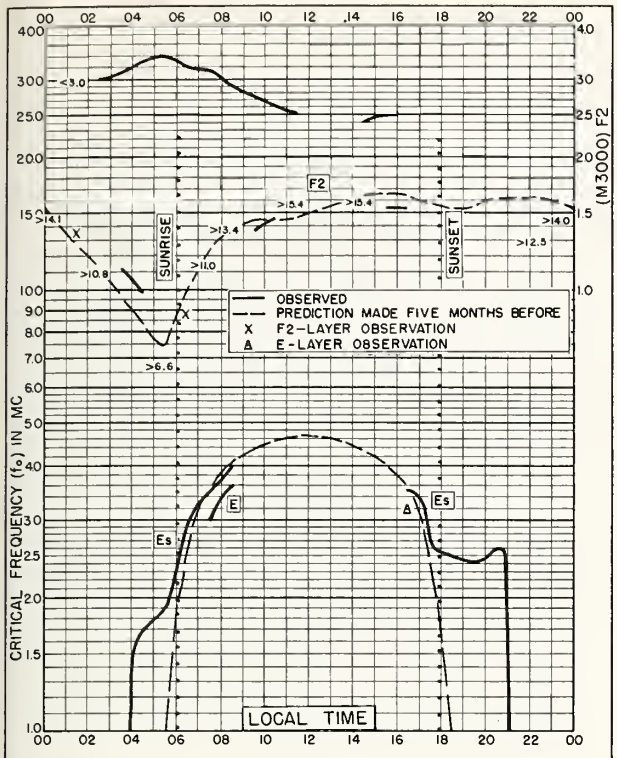


Fig. 49. NAIROBI, KENYA
1.3°S, 36.8°E APRIL 1957

NBS 503

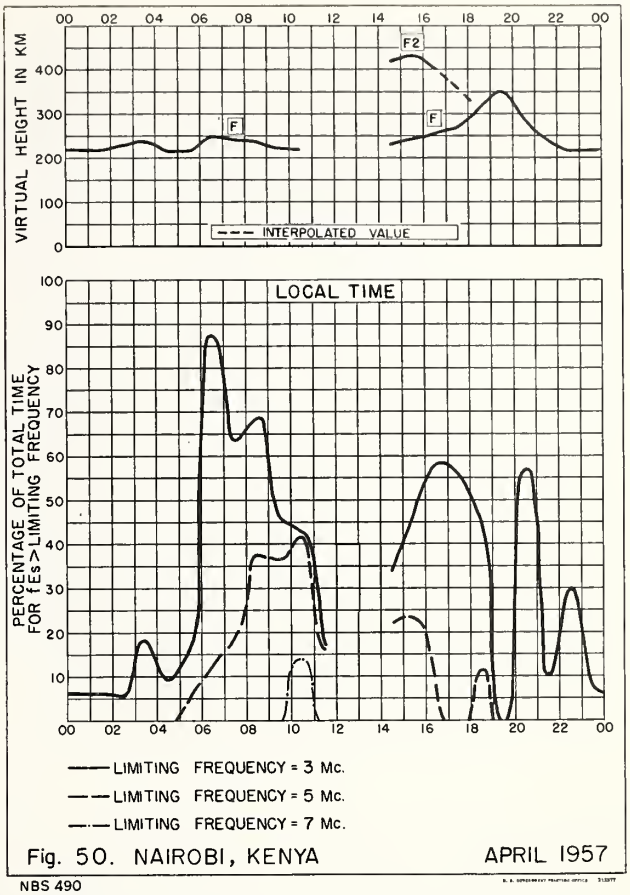


Fig. 50. NAIROBI, KENYA APRIL 1957

NBS 490

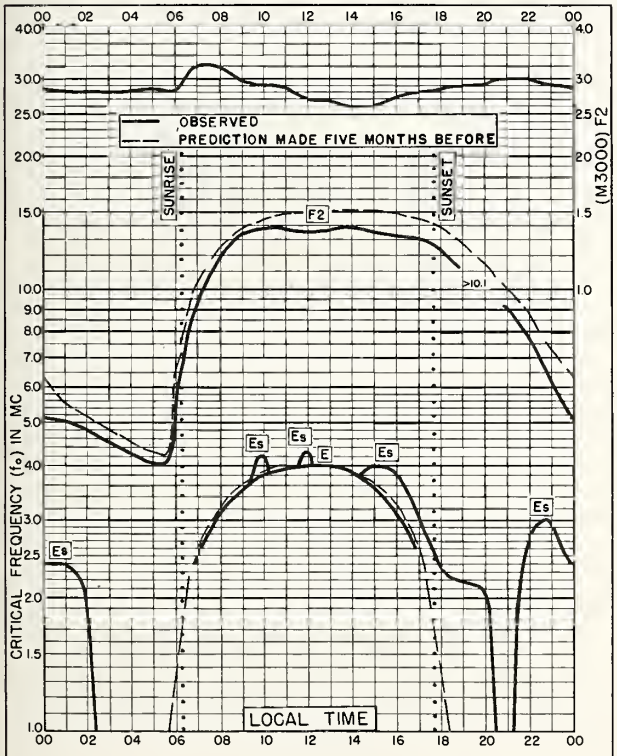


Fig. 51. JOHANNESBURG, UNION OF S. AFRICA
26.2°S, 28.0°E APRIL 1957

NBS 503

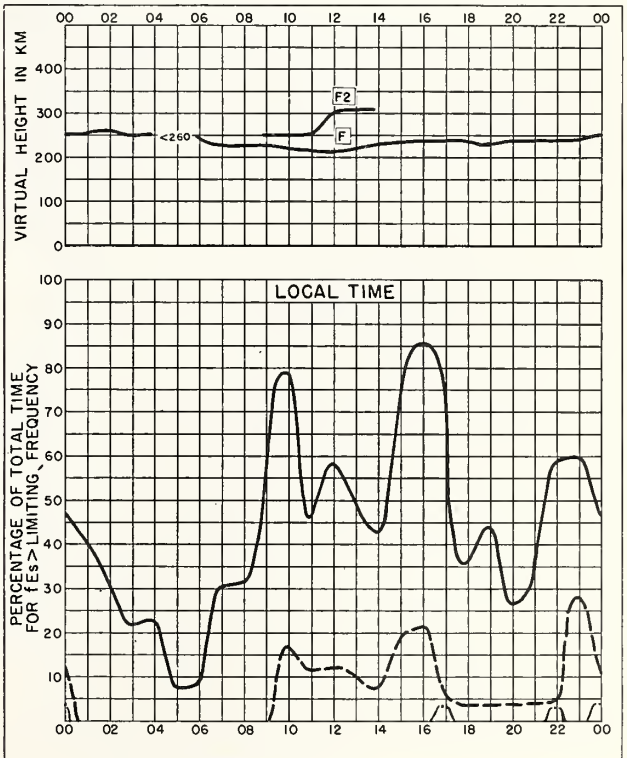


Fig. 52. JOHANNESBURG, UNION OF S. AFRICA APRIL 1957

NBS 490

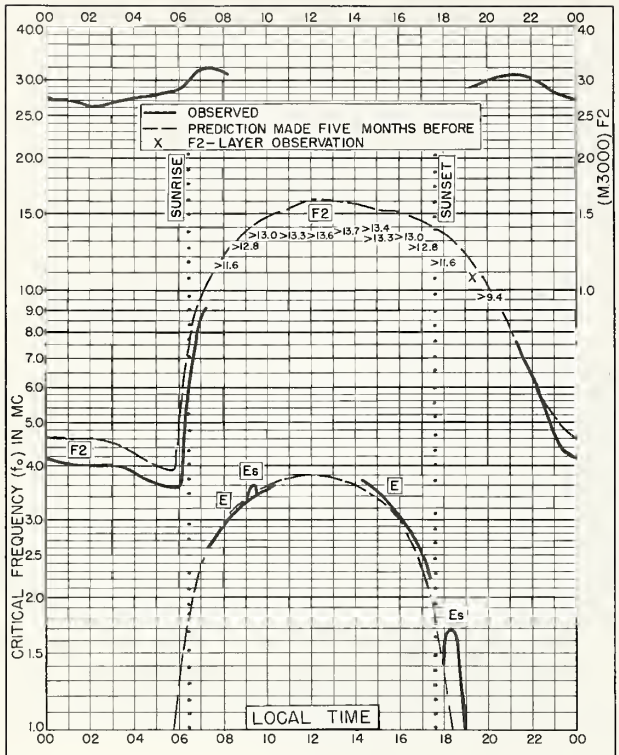


Fig. 53. CAPETOWN, UNION OF S. AFRICA
34.1°S, 18.3°E APRIL 1957

NBS 503

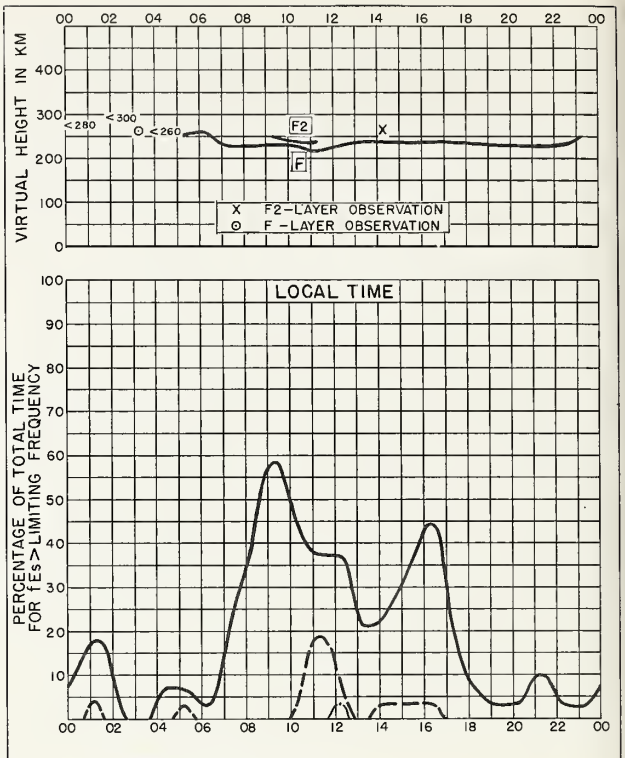


Fig. 54. CAPETOWN, UNION OF S. AFRICA APRIL 1957

NBS 490

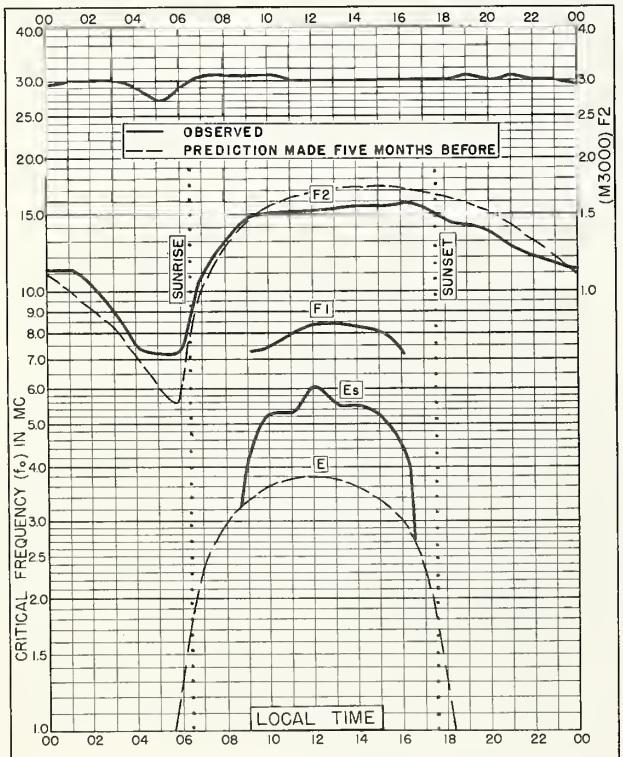


Fig. 55. BUENOS AIRES, ARGENTINA
34.5°S, 58.5°W APRIL 1957

NBS 503

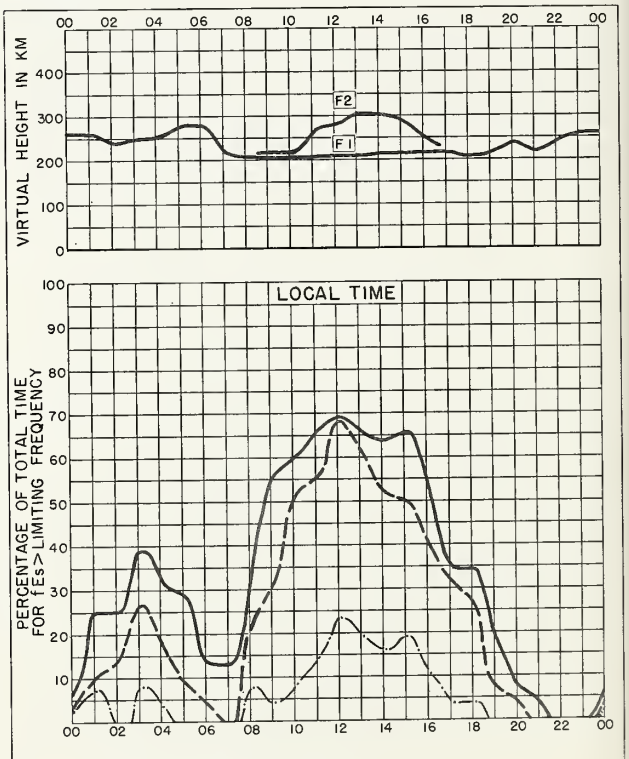


Fig. 56. BUENOS AIRES, ARGENTINA APRIL 1957

NBS 490

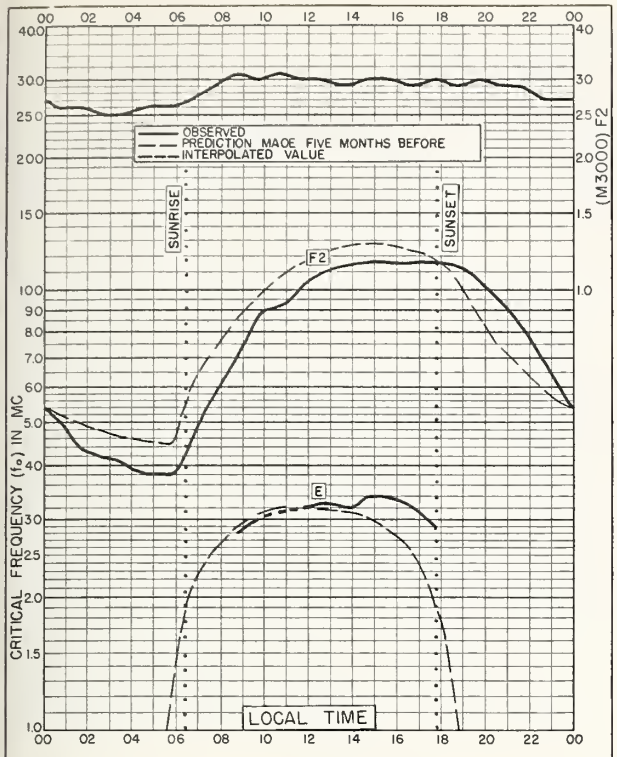


Fig. 57. YAKUTSK, U.S.S.R.
62.0°N, 129.4°E MARCH 1957

NBS 503

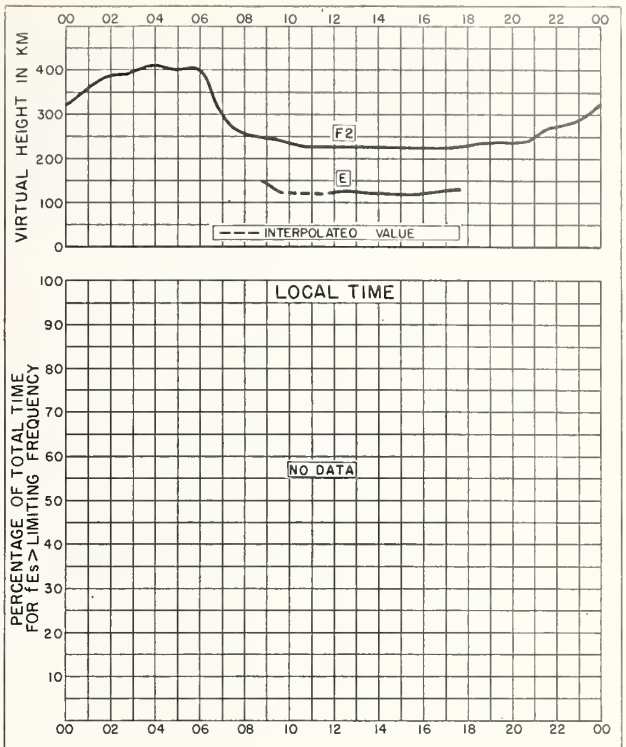


Fig. 58. YAKUTSK, U.S.S.R. MARCH 1957

NBS 490

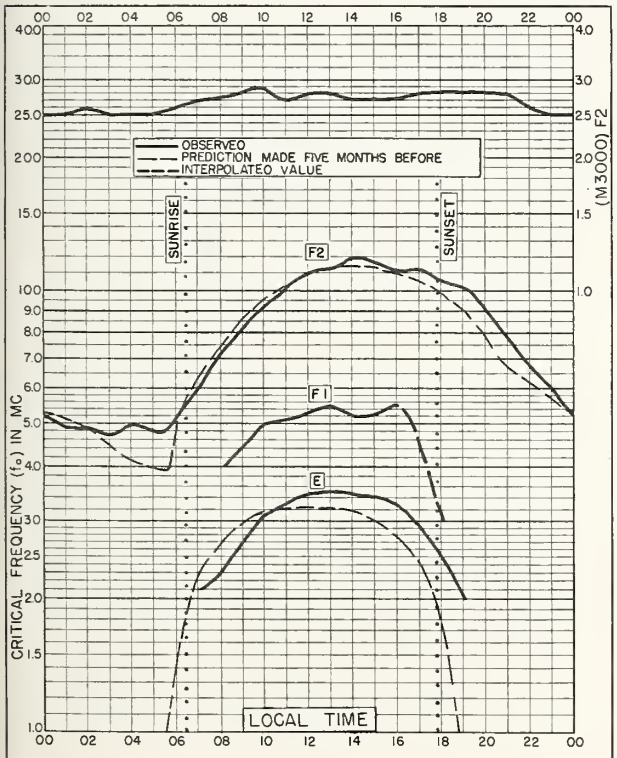


Fig. 59. LENINGRAD, U.S.S.R.
59.9°N, 30.7°E MARCH 1957

NBS 503

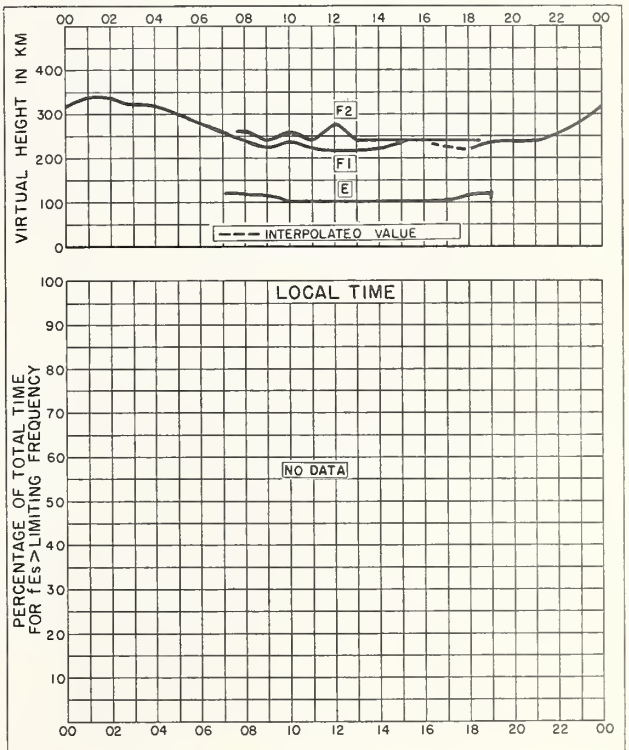


Fig. 60. LENINGRAD, U.S.S.R. MARCH 1957

NBS 490

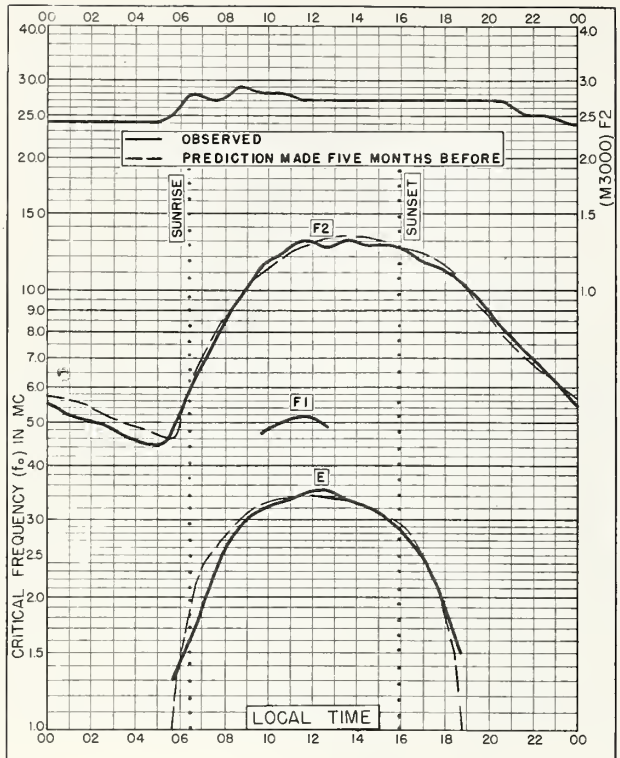


Fig. 61. TOMSK, U.S.S.R.
56.5°N, 84.9°E MARCH 1957

NBS 503

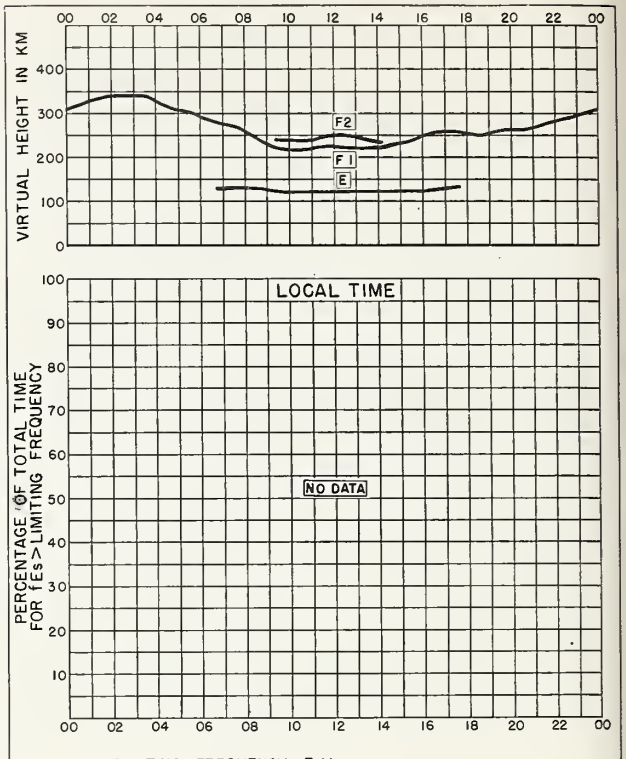


Fig. 62. TOMSK, U.S.S.R. MARCH 1957

NBS 490

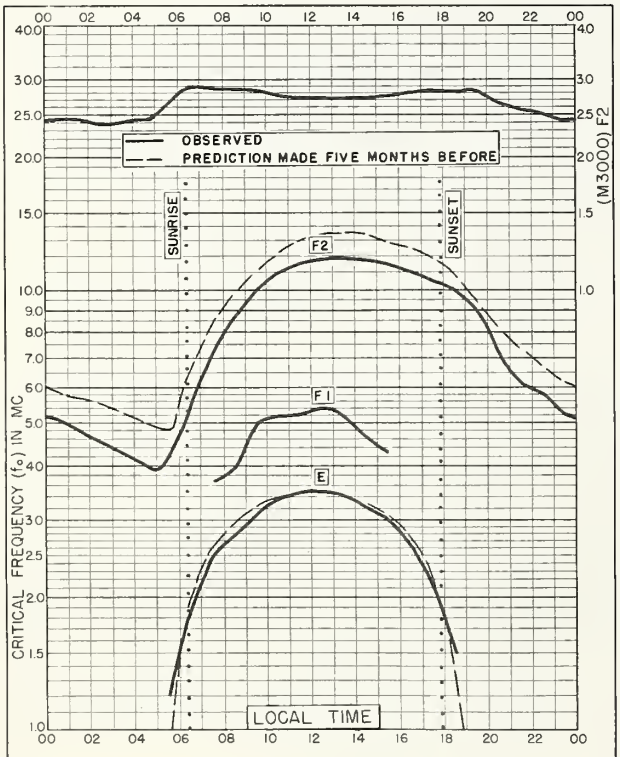


Fig. 63. MOSCOW, U.S.S.R.
55.5°N, 37.3°E MARCH 1957

NBS 503

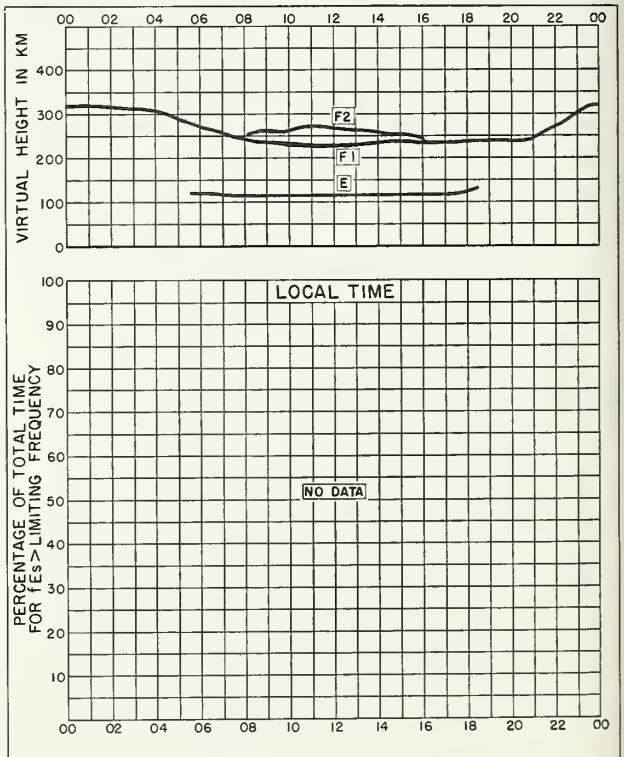


Fig. 64. MOSCOW, U.S.S.R. MARCH 1957

NBS 490

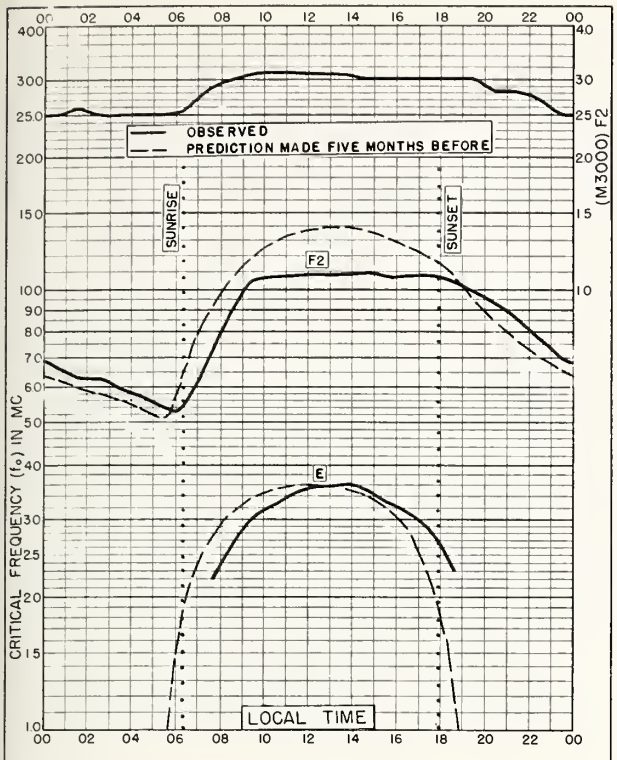


Fig. 65. CHITA, U.S.S.R.
52.0°N, 113.3°E MARCH 1957

NBS 503

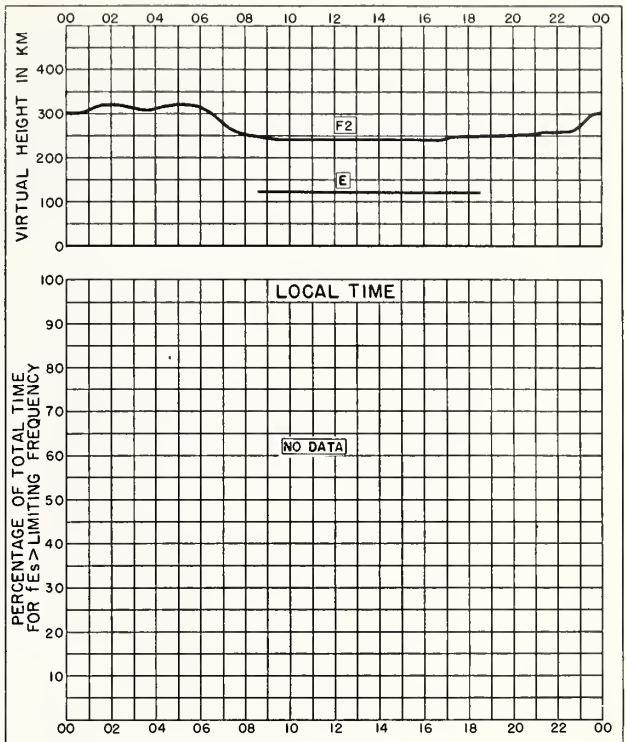


Fig. 66. CHITA, U.S.S.R. MARCH 1957

NBS 490

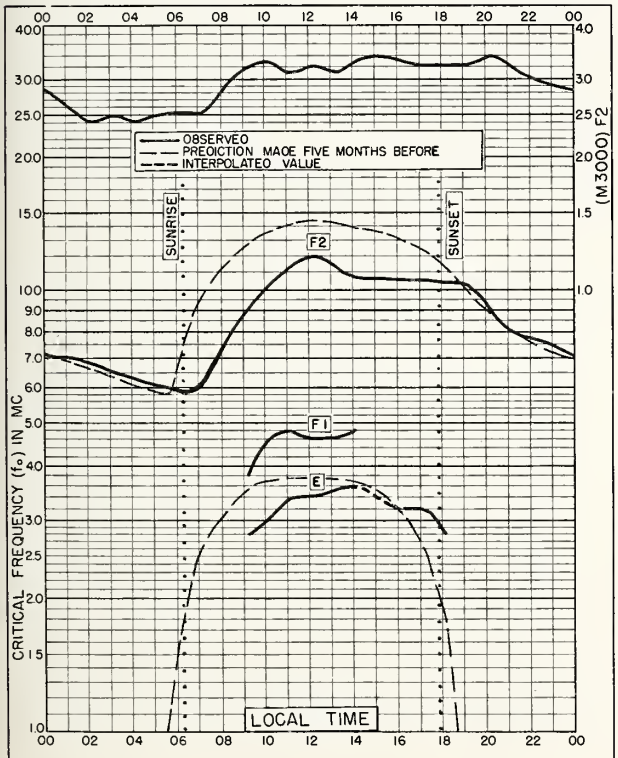


Fig. 67. YUZHNO-SAKHALINSK, U.S.S.R.
47.0°N, 143.0°E MARCH 1957

NBS 503

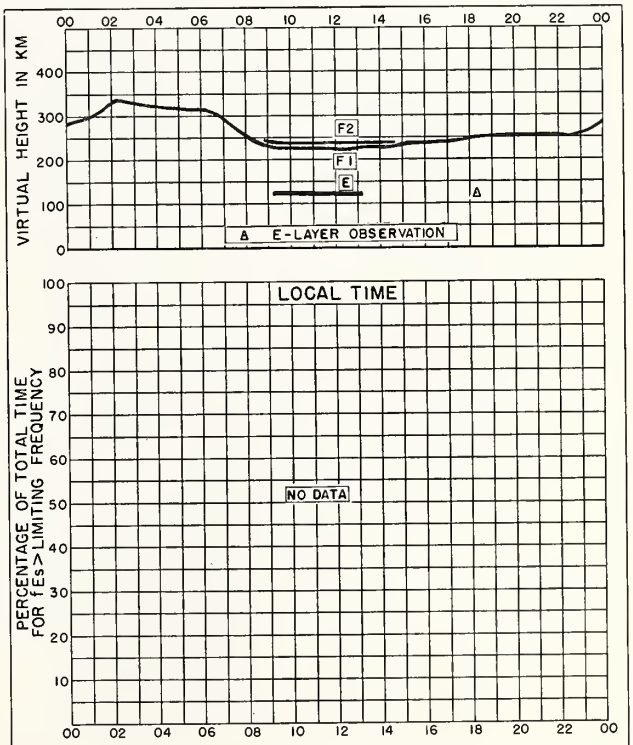


Fig. 68. YUZHNO-SAKHALINSK, U.S.S.R. MARCH 1957

NBS 490

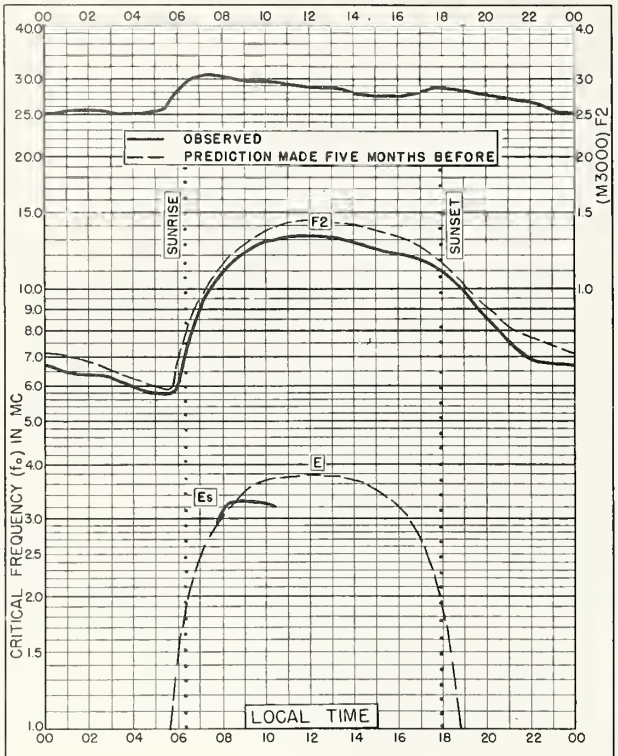


Fig. 69. WAKKANAI, JAPAN
45.4°N, 141.7°E MARCH 1957

NBS 503

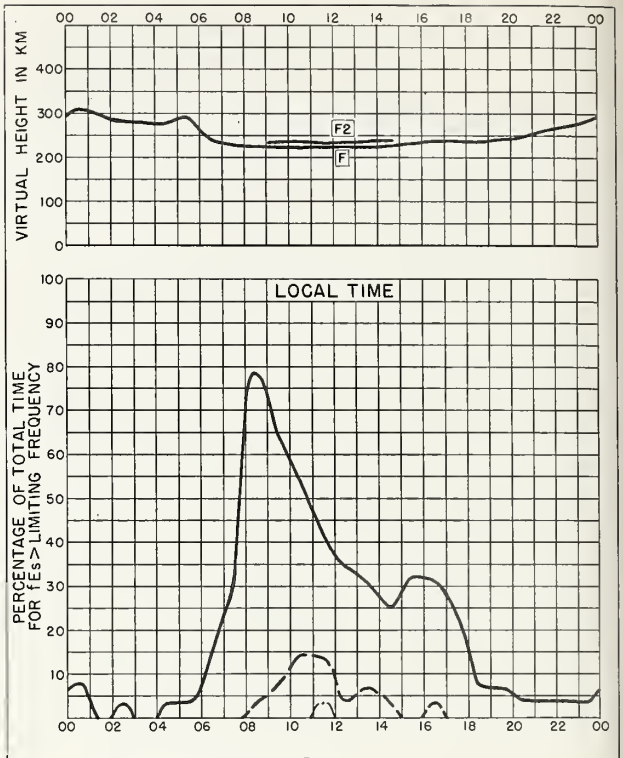


Fig. 70. WAKKANAI, JAPAN MARCH 1957

NBS 490

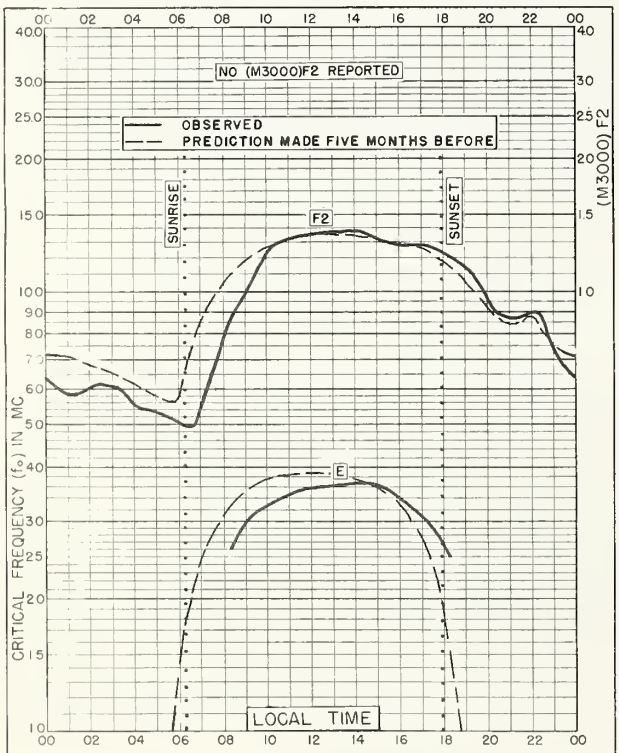


Fig. 71. SIMFEROPOL, U.S.S.R.
44.4°N, 34.0°E MARCH 1957

NBS 503

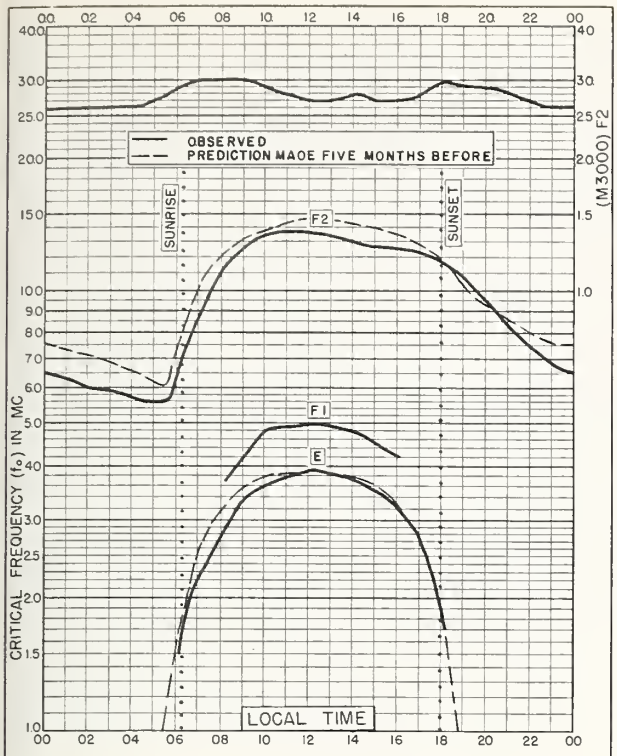


Fig. 72. ALMA-ATA, U.S.S.R.
43.2°N, 76.9°E MARCH 1957

NBS 503

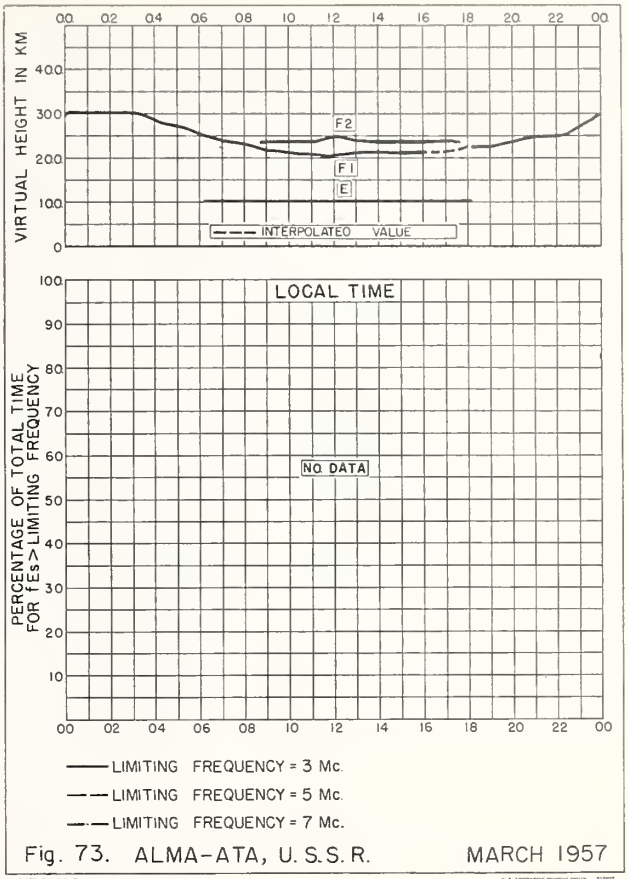


Fig. 73. ALMA-ATA, U.S.S.R. MARCH 1957

NBS 490

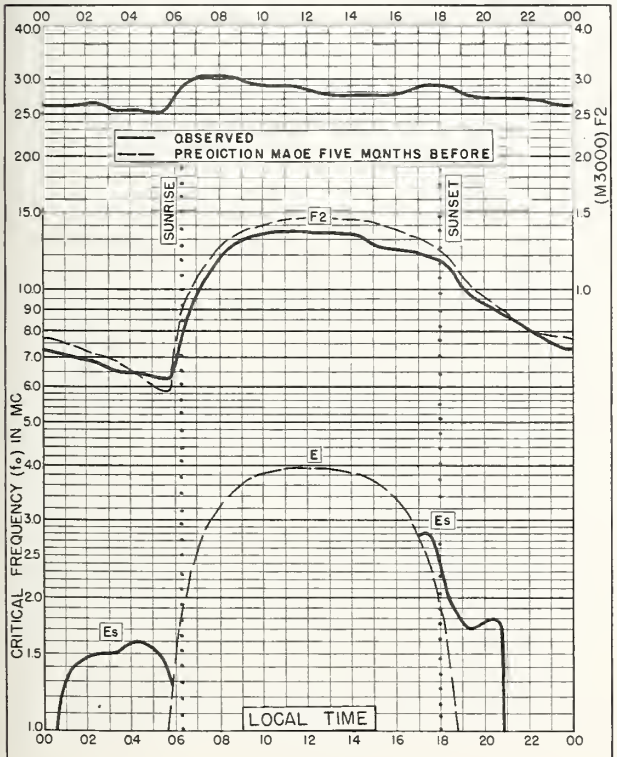


Fig. 74. AKITA JAPAN
39.7°N, 140.1°E MARCH 1957

NBS 503

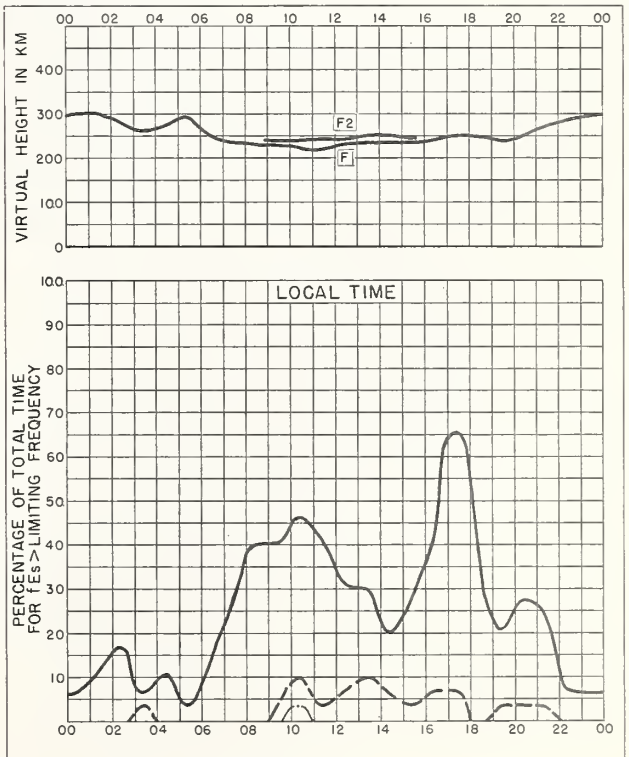


Fig. 75. AKITA, JAPAN MARCH 1957

NBS 490

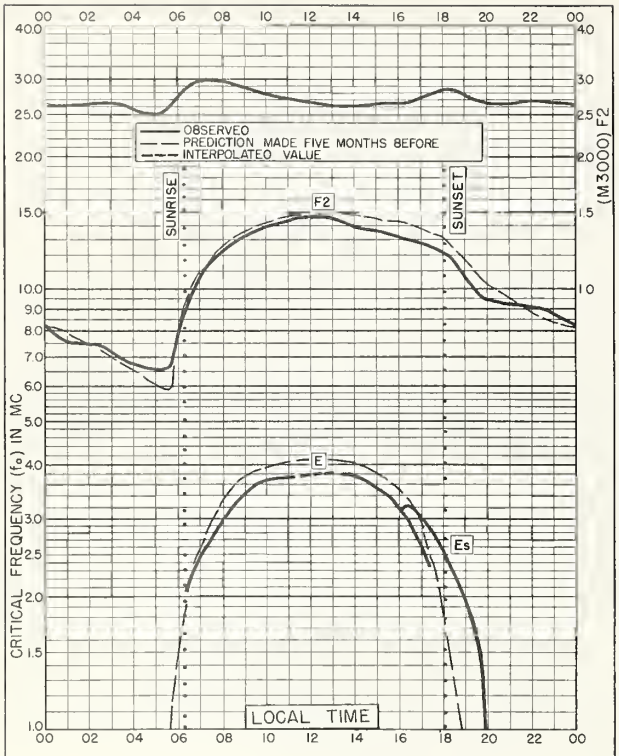


Fig. 76. TOKYO, JAPAN
35.7°N, 139.5°E MARCH 1957

NBS 503

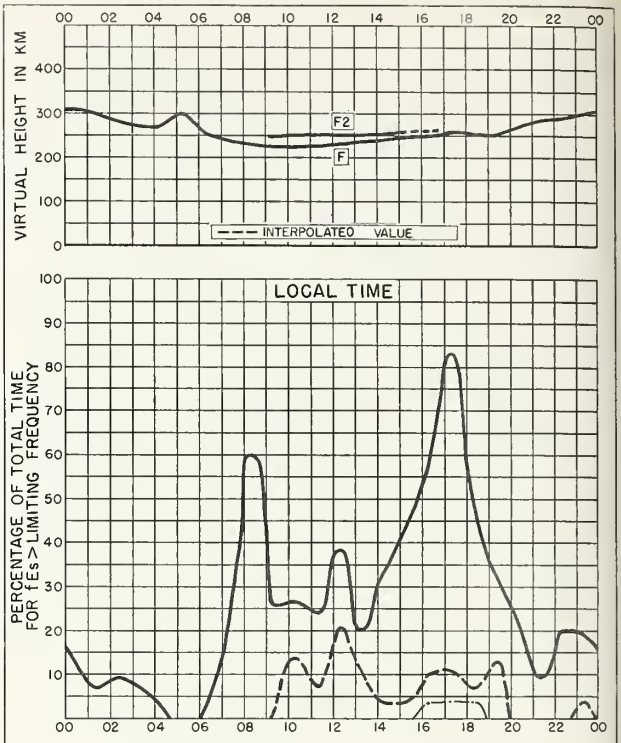


Fig. 77. TOKYO, JAPAN MARCH 1957

NBS 490

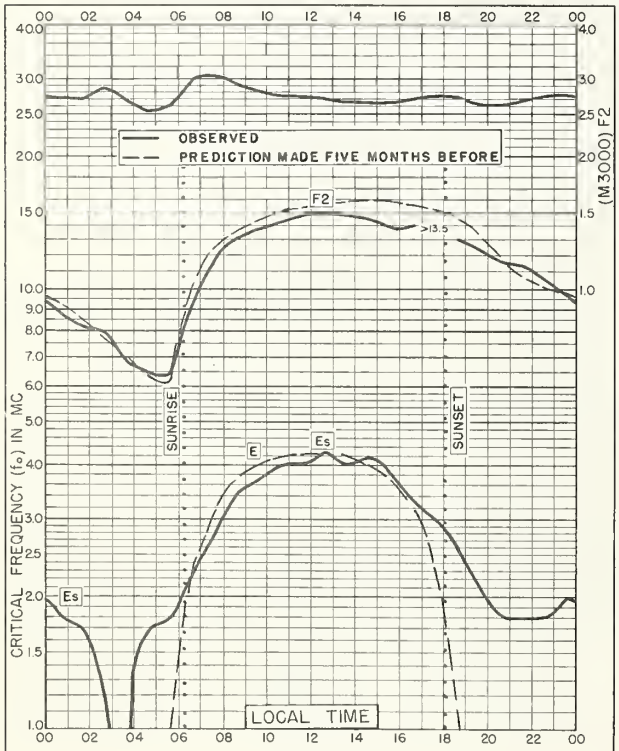


Fig. 78. YAMAGAWA, JAPAN
31.2°N, 130.6°E MARCH 1957

NBS 503

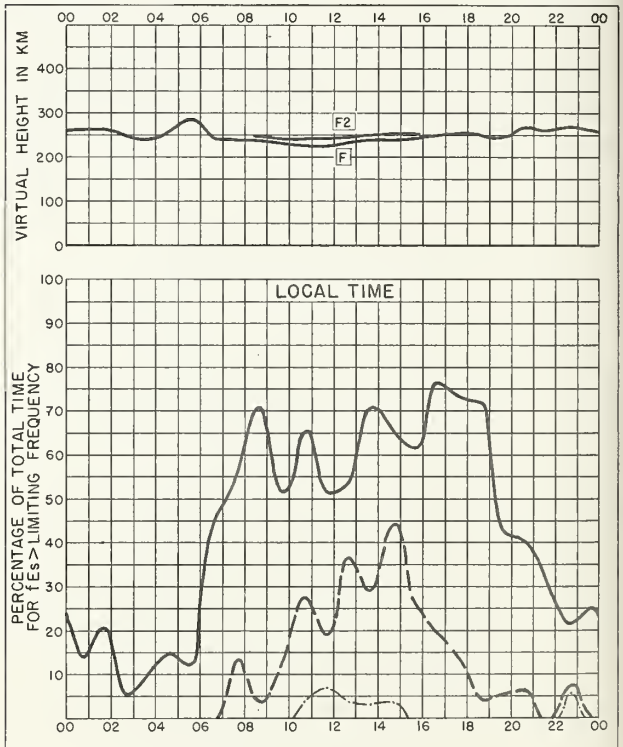


Fig. 79. YAMAGAWA, JAPAN MARCH 1957

NBS 490

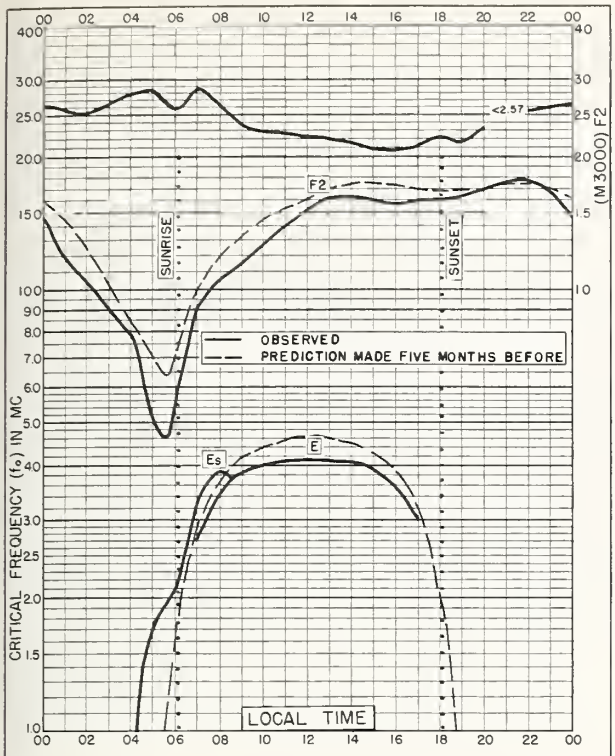
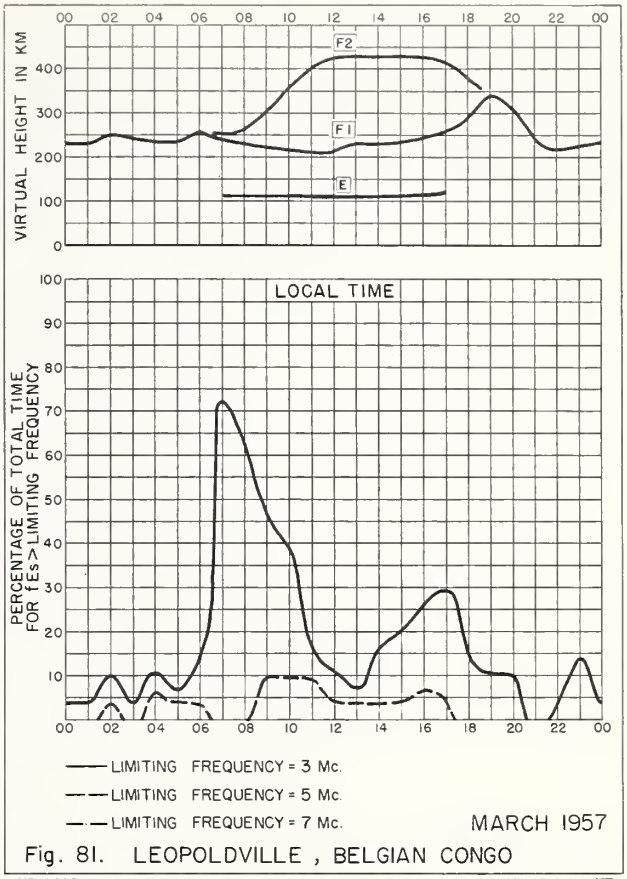


Fig. 80. LEOPOLDVILLE, BELGIAN CONGO
4.4°S, 15.2°E MARCH 1957

NBS 503



MARCH 1957

Fig. 81. LEOPOLDVILLE, BELGIAN CONGO

NBS 490

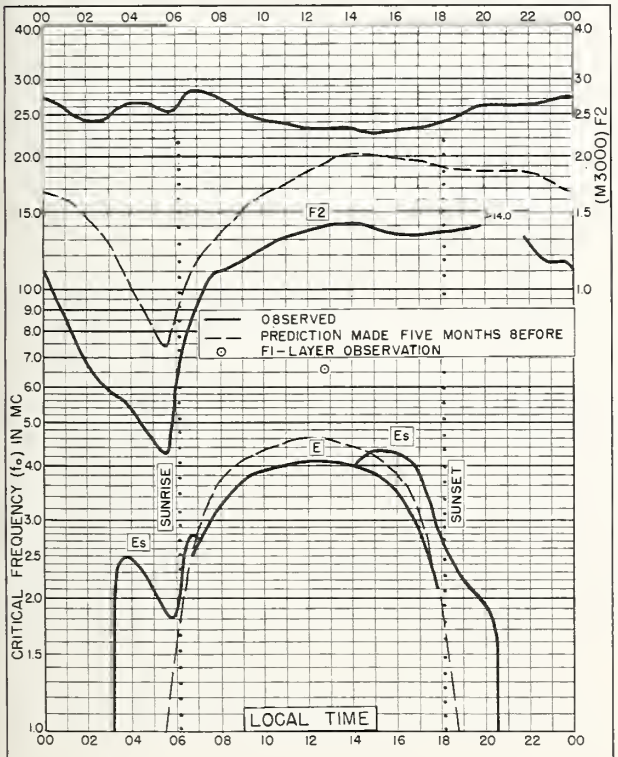
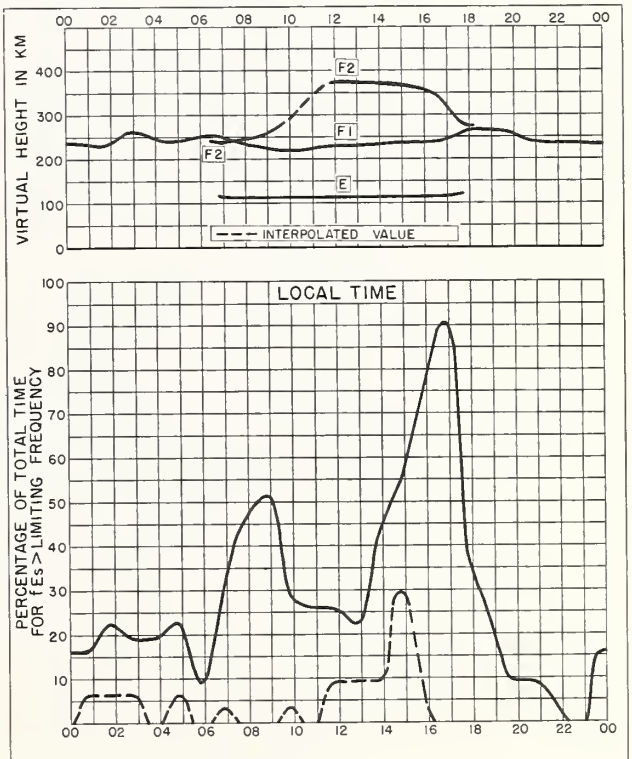


Fig. 82. ELISABETHVILLE, BELGIAN CONGO
11.6°S, 27.5°E MARCH 1957

NBS 503



MARCH 1957

Fig. 83. ELISABETHVILLE, BELGIAN CONGO

NBS 490

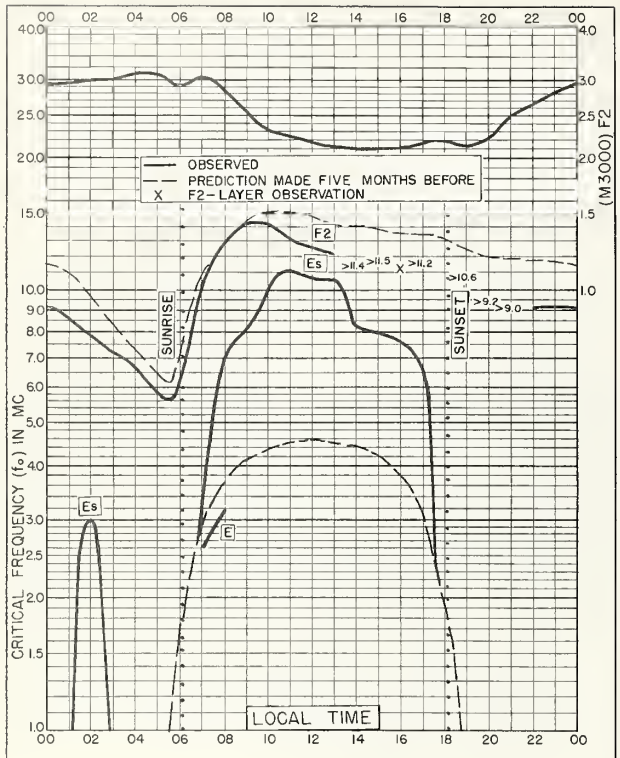


Fig. 84. HUANCAYO, PERU
12.0°S, 75.3°W MARCH 1957

NBS 503

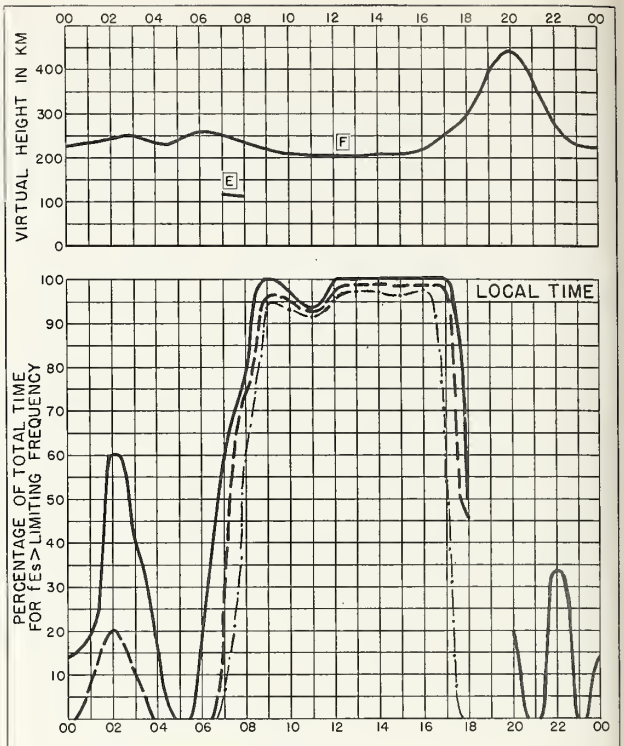


Fig. 85. HUANCAYO, PERU MARCH 1957

NBS 490

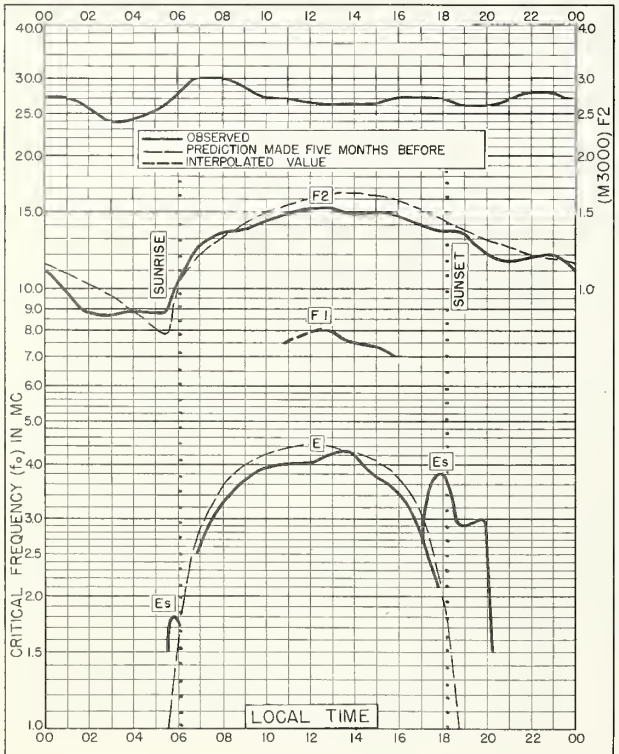


Fig. 86. RAROTONGA I.
21.2°S, 159.8°W MARCH 1957

NBS 503

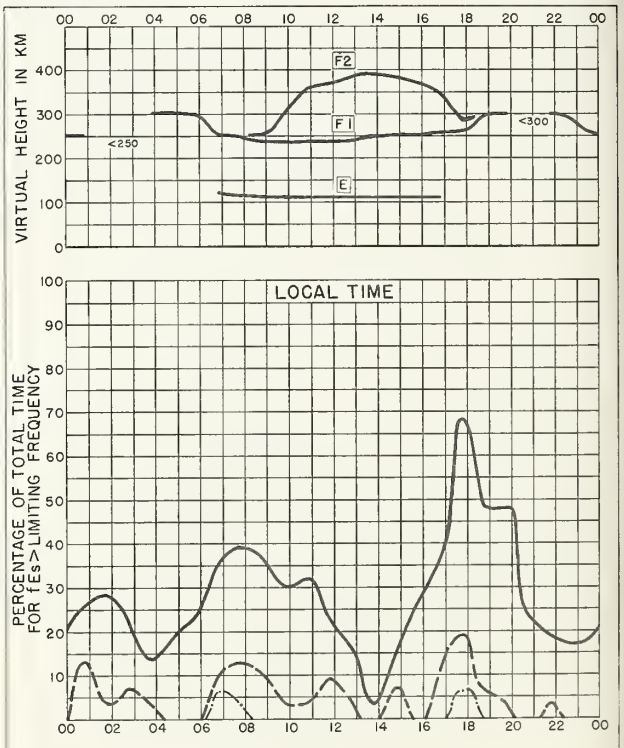


Fig. 87. RAROTONGA I. MARCH 1957

NBS 490

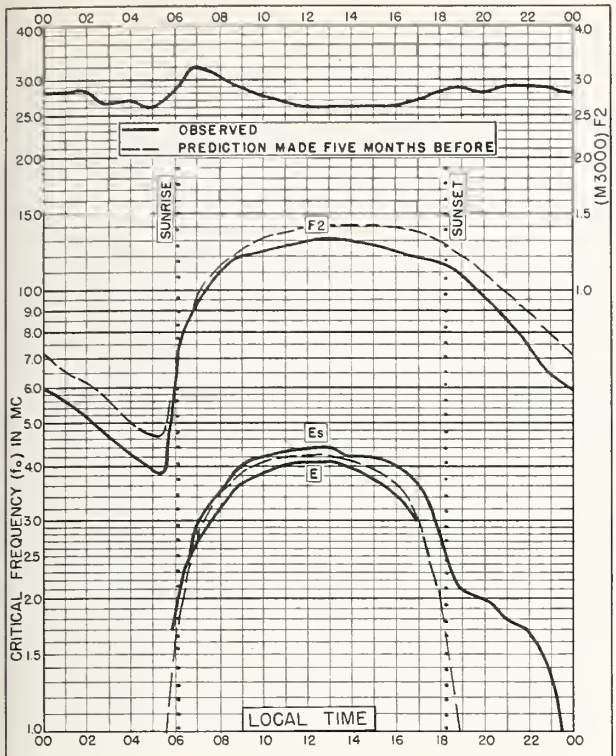
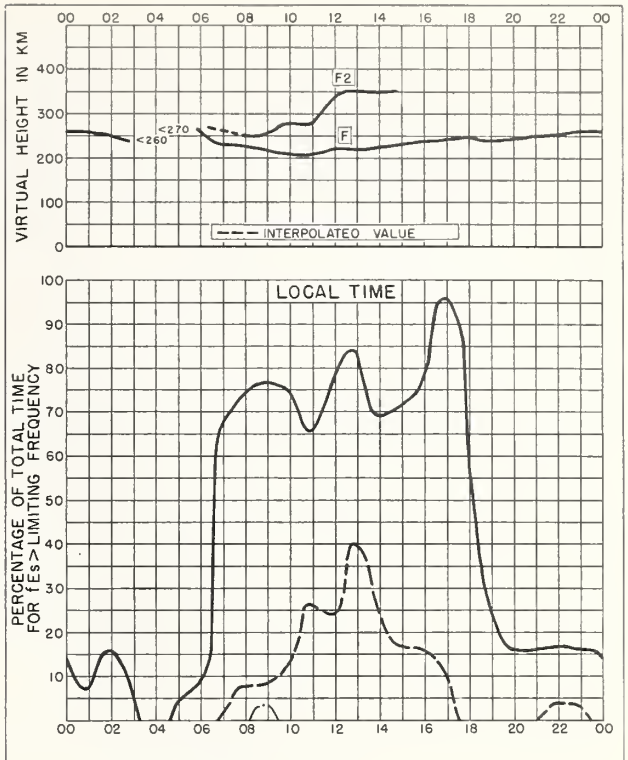


Fig. 88. JOHANNESBURG, UNION OF S. AFRICA
26.2°S, 28.0°E MARCH 1957

NBS 503



MARCH 1957

Fig. 89. JOHANNESBURG, UNION OF S. AFRICA

NBS 490

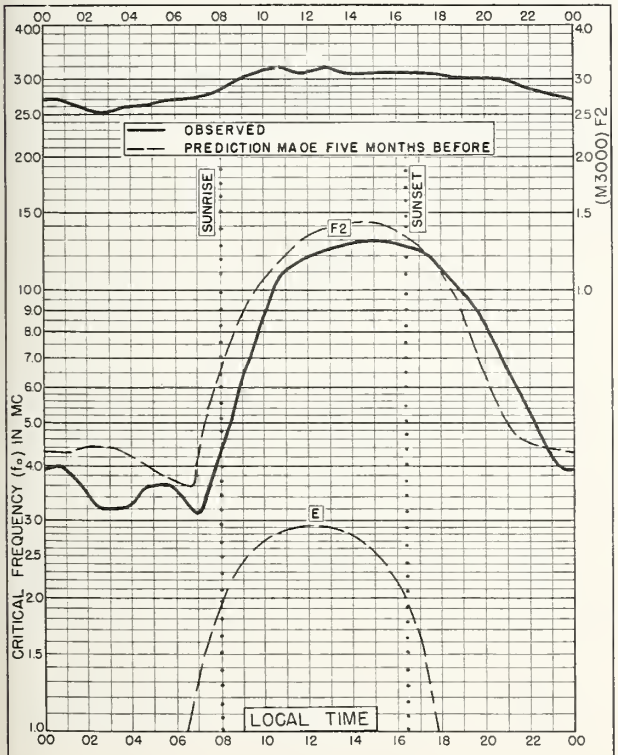


Fig. 90. YAKUTSK, U.S.S.R.
62.0°N, 129.4°E FEBRUARY 1957

NBS 503

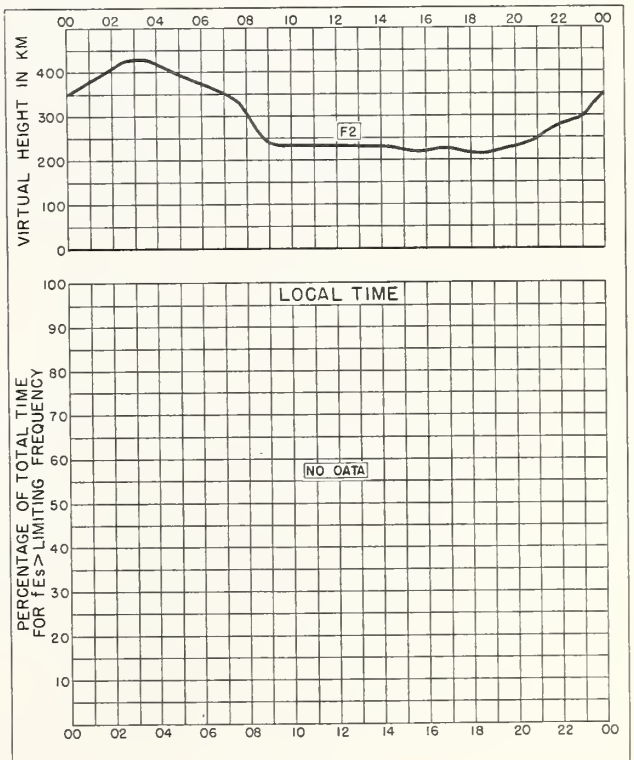


Fig. 91. YAKUTSK, U.S.S.R. FEBRUARY 1957

NBS 490

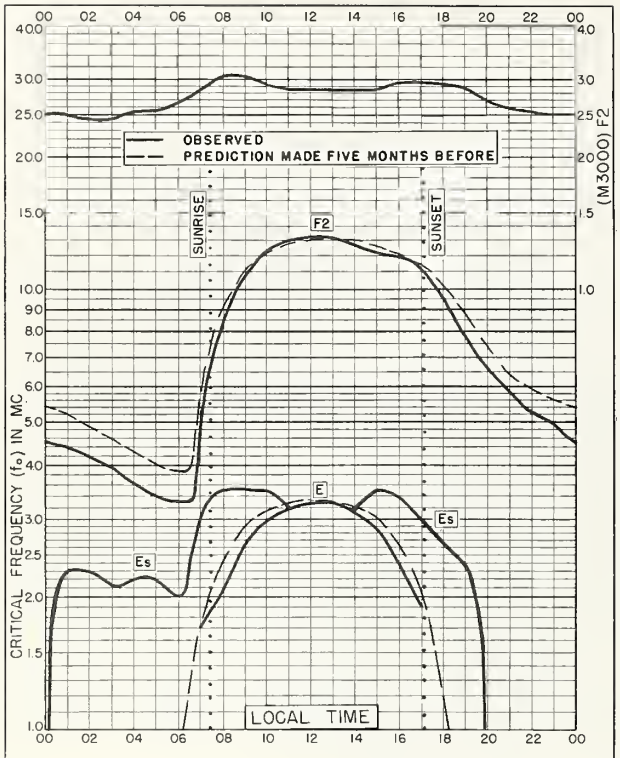


Fig. 92. SLOUGH, ENGLAND
51.5°N, 0.6°W FEBRUARY 1957

NBS 503

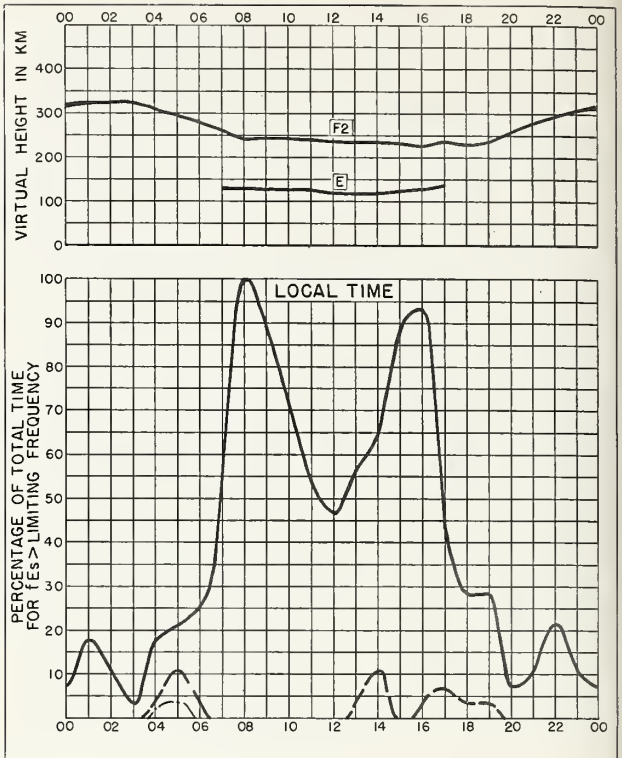


Fig. 93. SLOUGH, ENGLAND FEBRUARY 1957

NBS 490

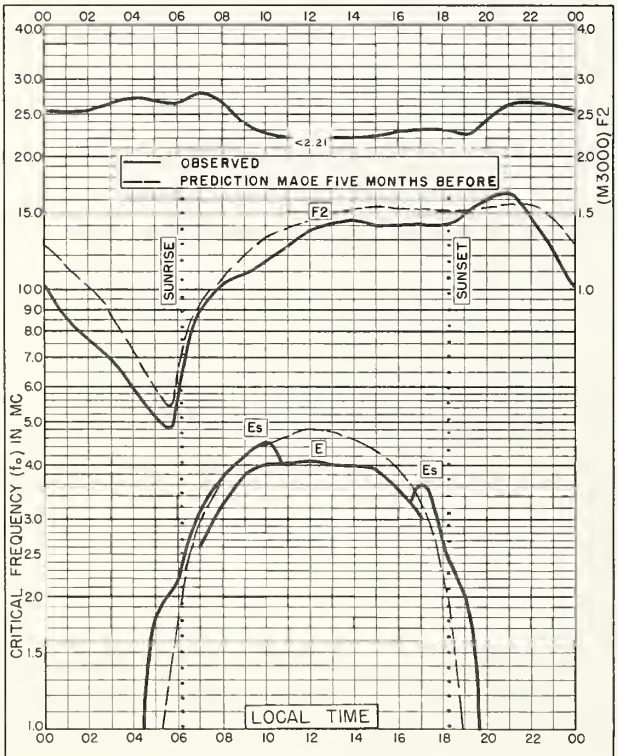


Fig. 94. LEOPOLDVILLE, BELGIAN CONGO
4.4°S, 15.2°E FEBRUARY 1957

NBS 503

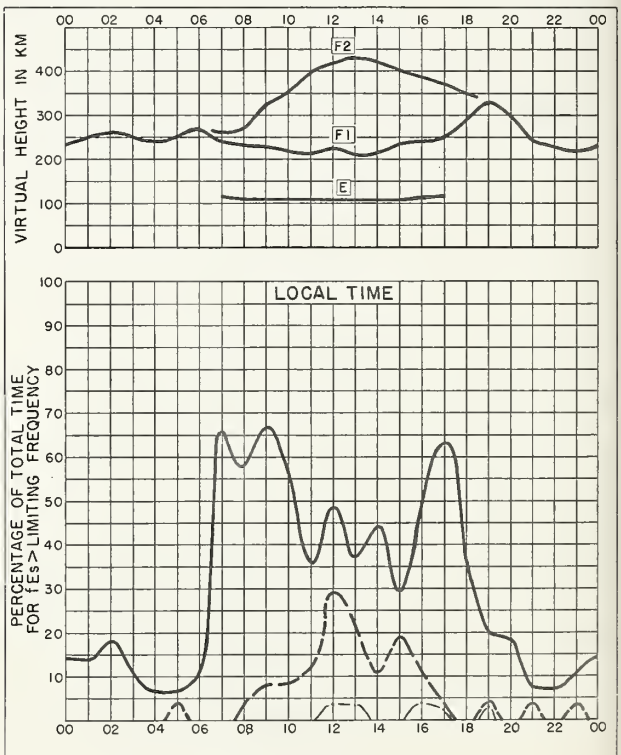


Fig. 95. LEOPOLDVILLE, BELGIAN CONGO FEBRUARY 1957

NBS 490

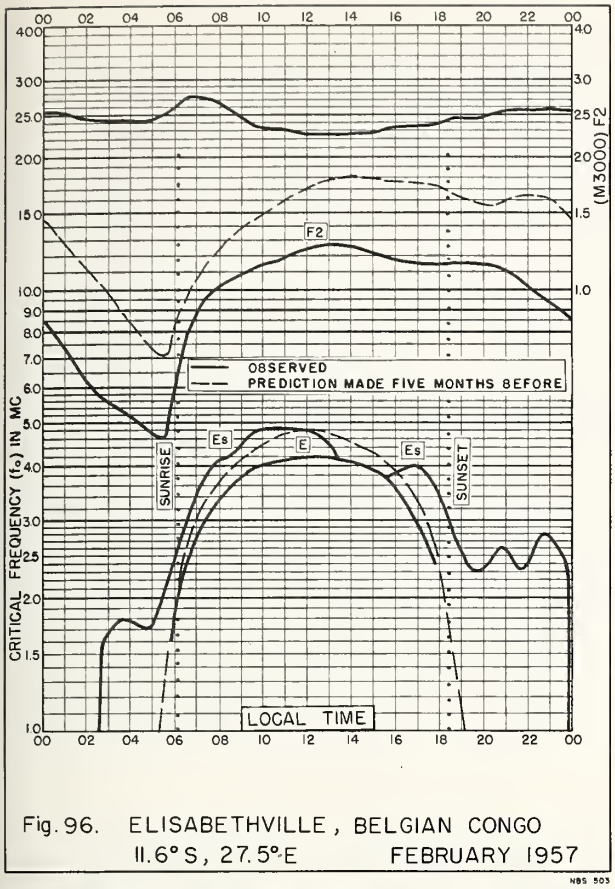


Fig. 96. ELISABETHVILLE, BELGIAN CONGO
11.6°S, 27.5°E FEBRUARY 1957

NBS 503

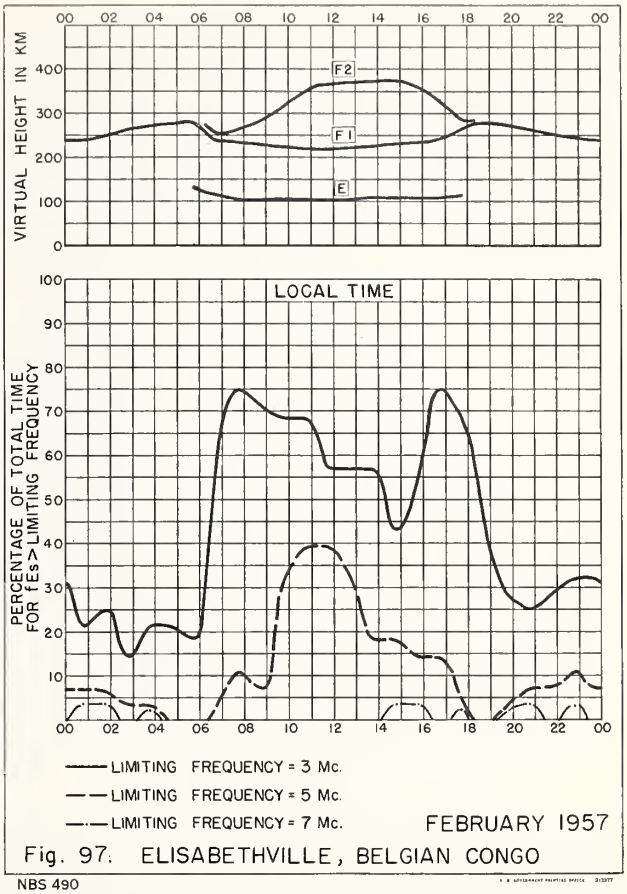


Fig. 97. ELISABETHVILLE, BELGIAN CONGO

NBS 490

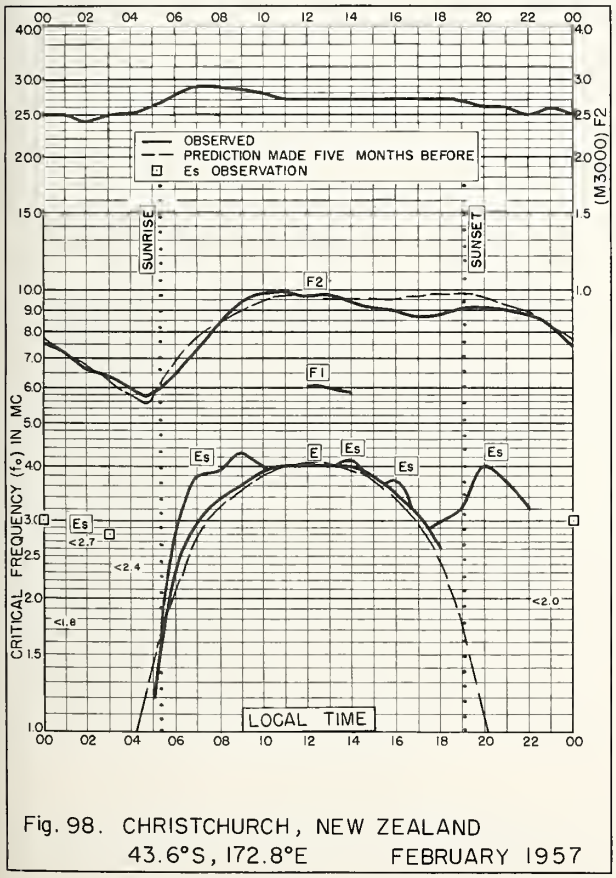


Fig. 98. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.8°E FEBRUARY 1957

NBS 503

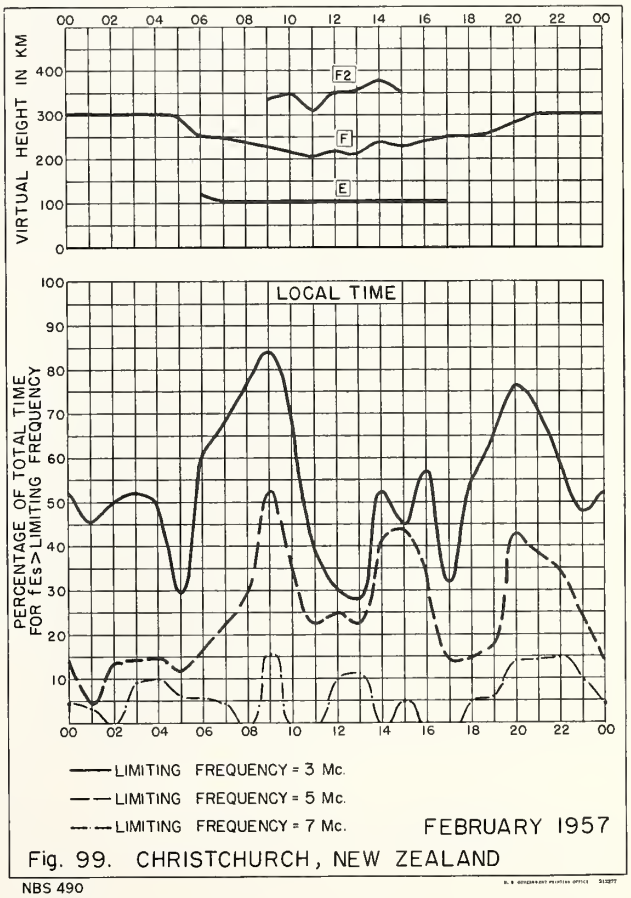


Fig. 99. CHRISTCHURCH, NEW ZEALAND

NBS 490

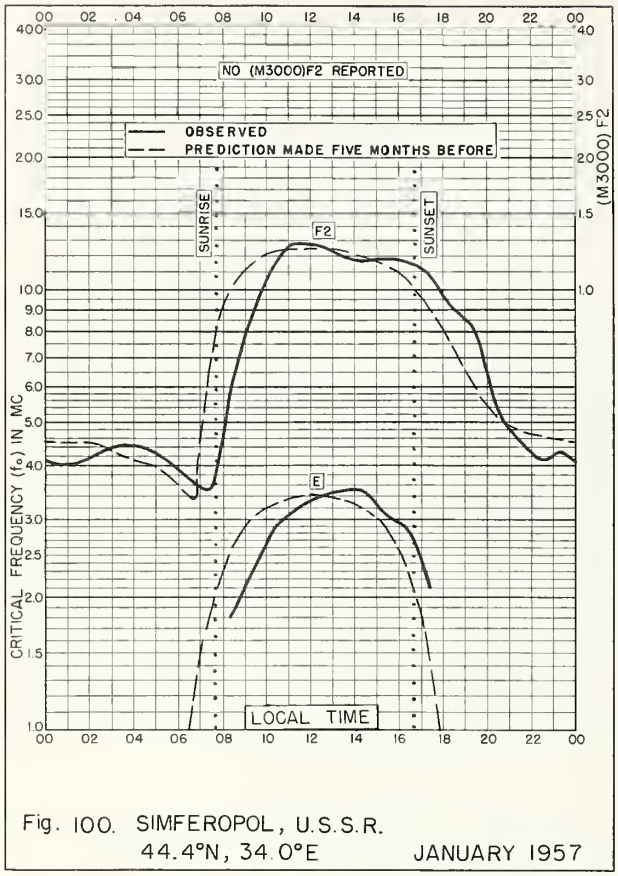


Fig. 100. SIMFEROPOL, U.S.S.R.
44.4°N, 34.0°E JANUARY 1957

NBS 503

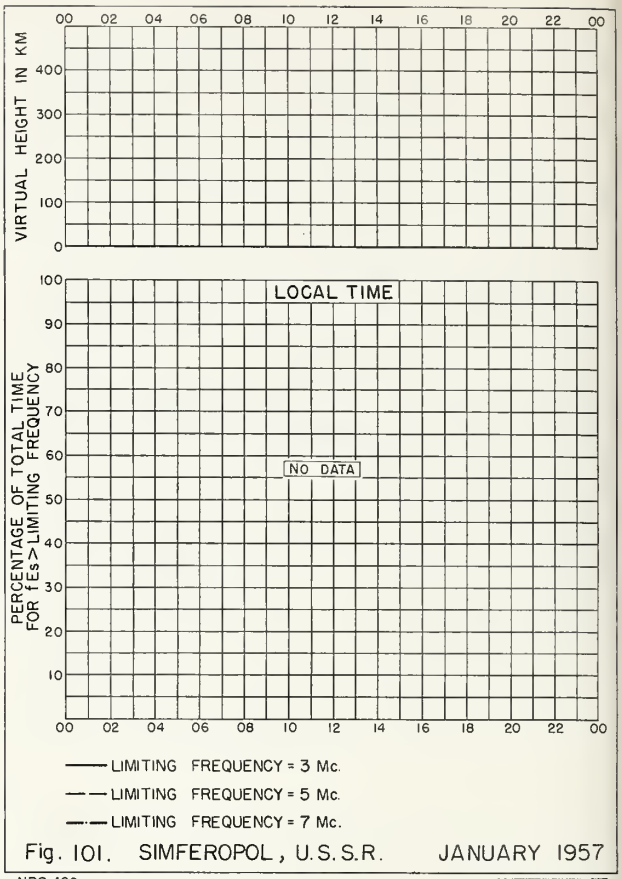


Fig. 101. SIMFEROPOL, U.S.S.R. JANUARY 1957

NBS 490

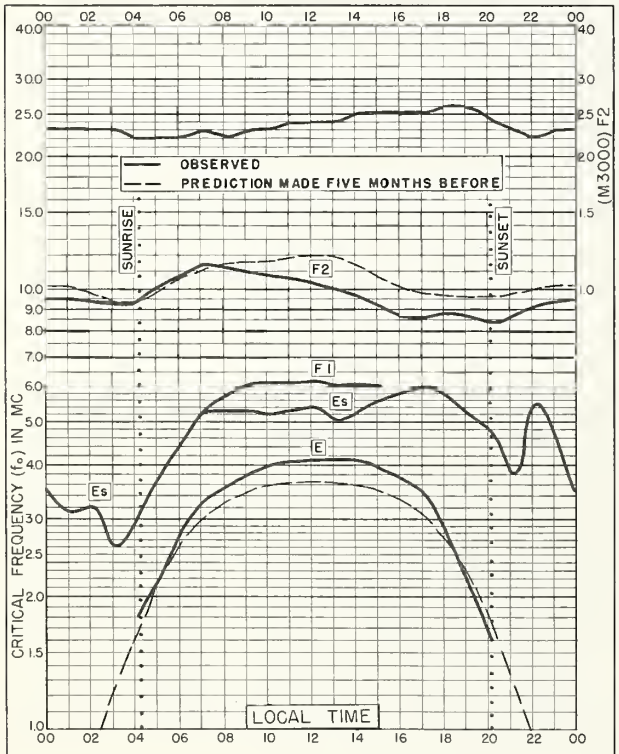


Fig. 102. FALKLAND IS.
51.7°S, 57.8°W JANUARY 1957

NBS 503

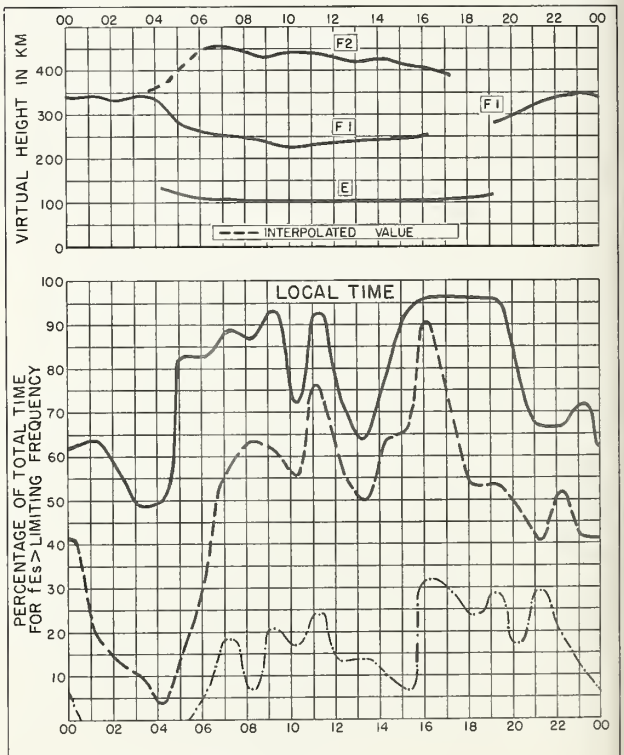


Fig. 103. FALKLAND IS. JANUARY 1957

NBS 490

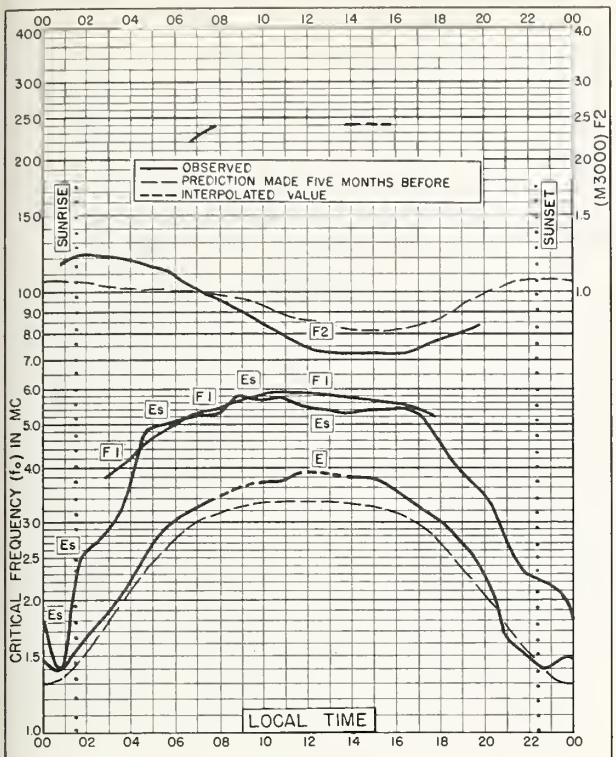


Fig. 104. PORT LOCKROY
64.8°S, 63.5°W DECEMBER 1956

NBS 503

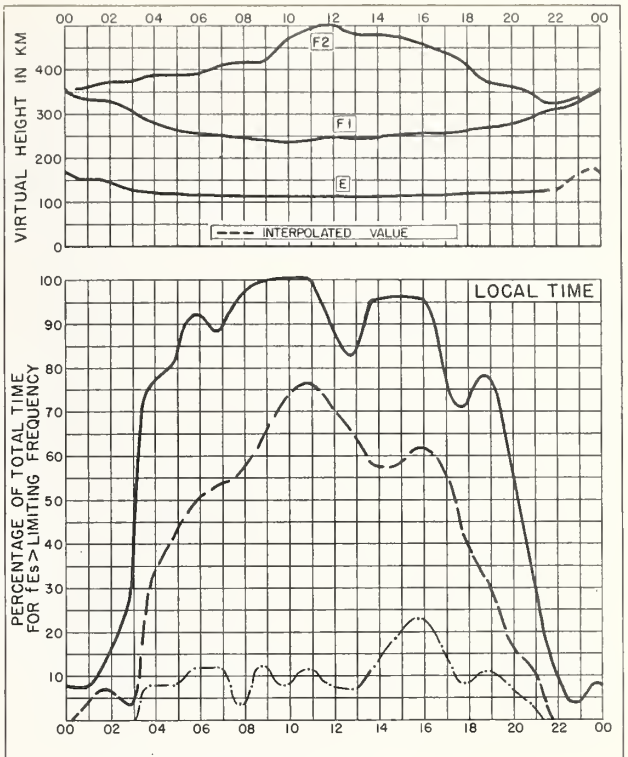


Fig. 105. PORT LOCKROY DECEMBER 1956

NBS 490

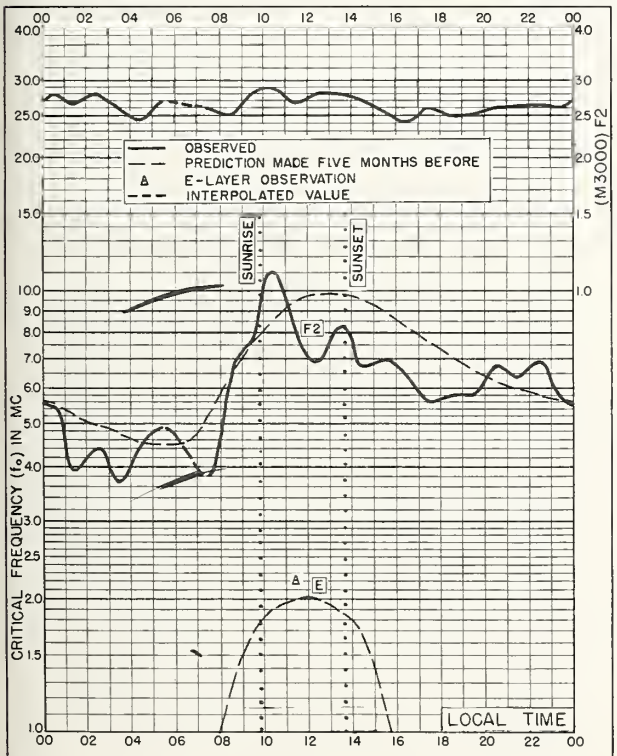


Fig. 106. GODHAVN, GREENLAND
69.2°N, 53.5°W NOVEMBER 1956

NBS 503

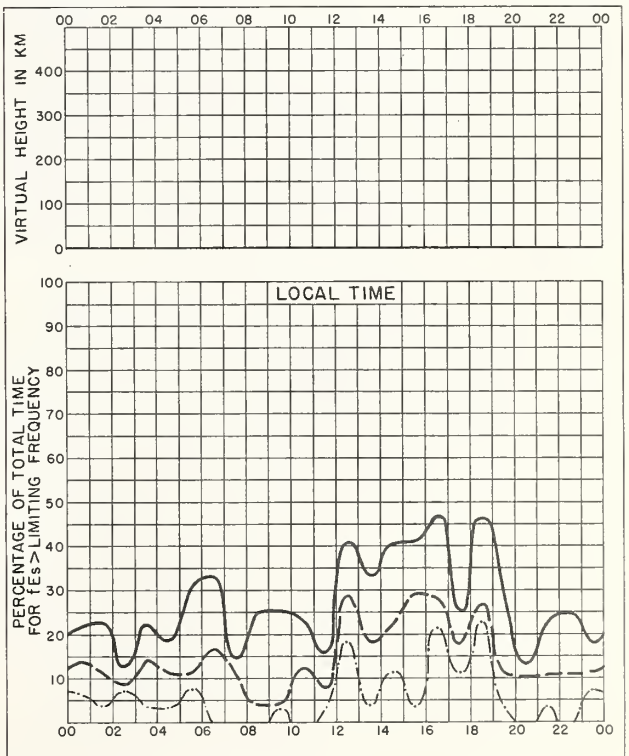


Fig. 107. GODHAVN, GREENLAND NOVEMBER 1956

NBS 490

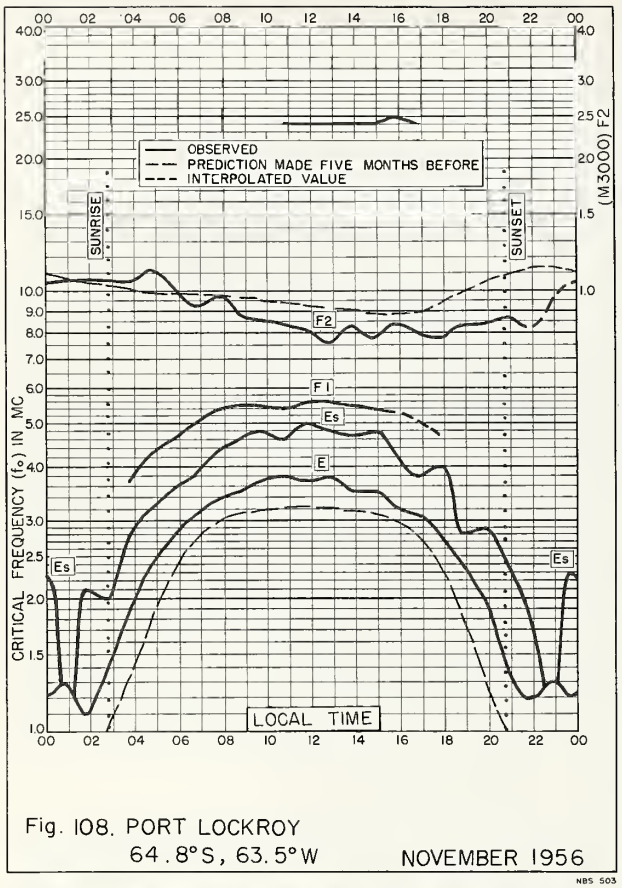


Fig. 108. PORT LOCKROY
64.8°S, 63.5°W NOVEMBER 1956

NBS 503

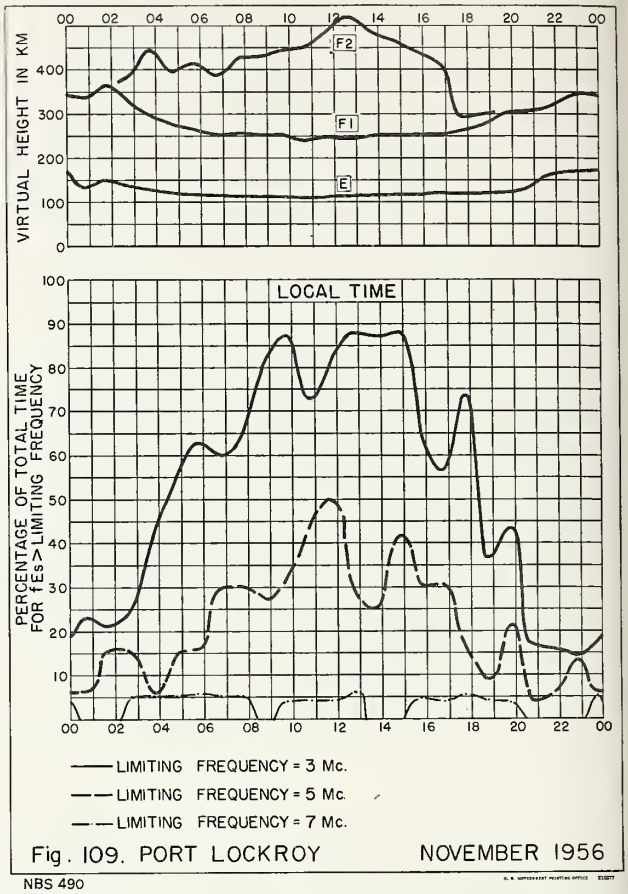


Fig. 109. PORT LOCKROY NOVEMBER 1956

NBS 490

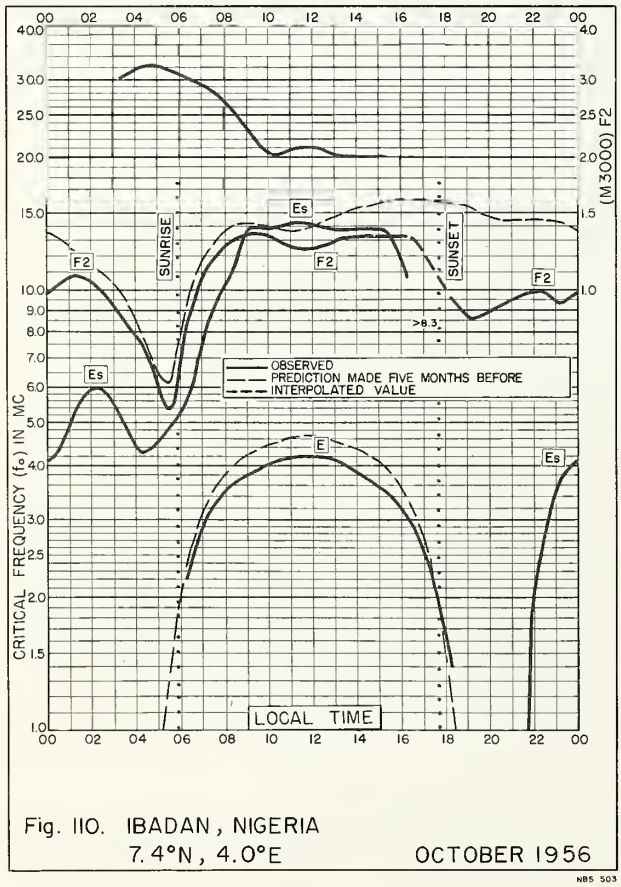


Fig. 110. IBADAN, NIGERIA
7.4°N, 4.0°E OCTOBER 1956

NBS 503

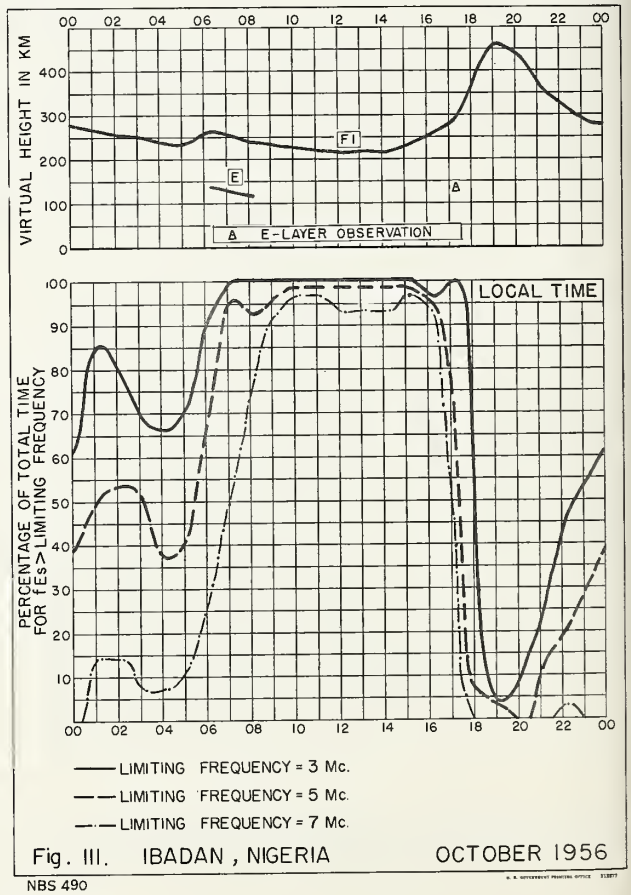


Fig. 111. IBADAN, NIGERIA OCTOBER 1956

NBS 490

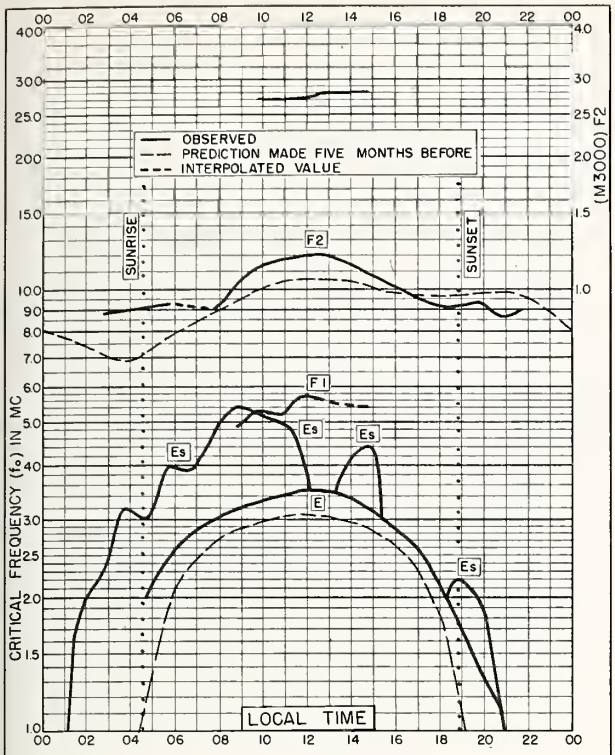


Fig. 112. PORT LOCKROY
64.8°S, 63.5°W OCTOBER 1956

NBS 503

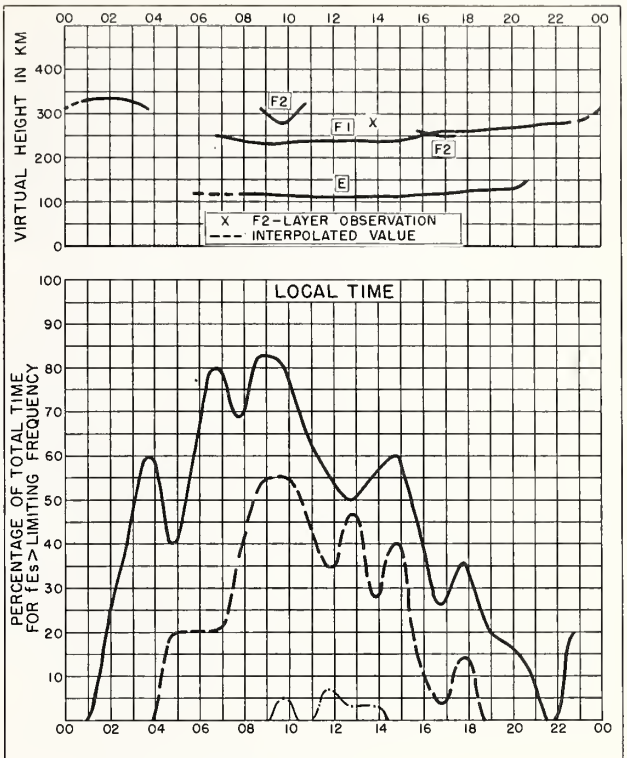


Fig. 113. PORT LOCKROY OCTOBER 1956

NBS 490

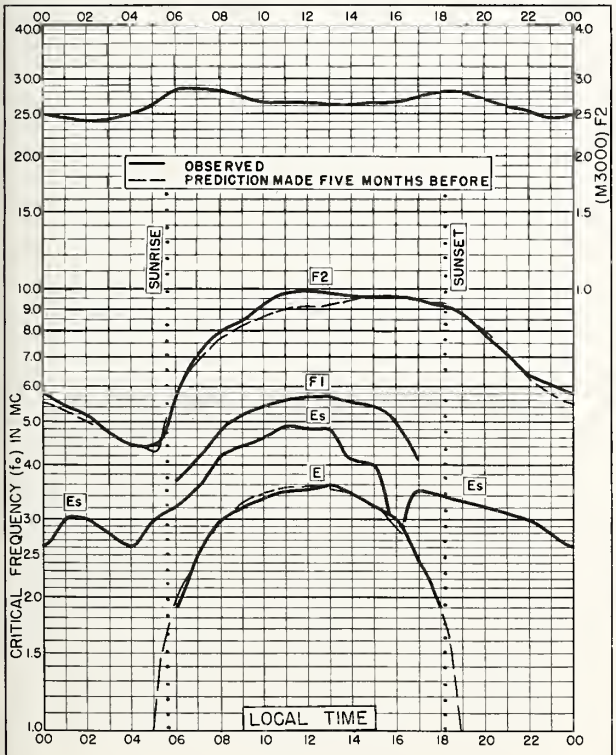


Fig. 114. SLOUGH, ENGLAND
51.5°N, 0.6°W SEPTEMBER 1956

NBS 503

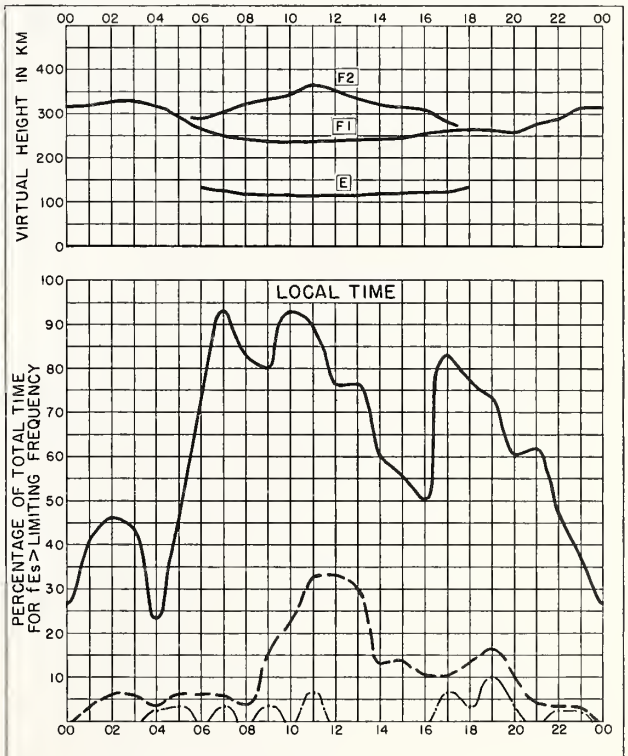


Fig. 115. SLOUGH, ENGLAND SEPTEMBER 1956

NBS 490

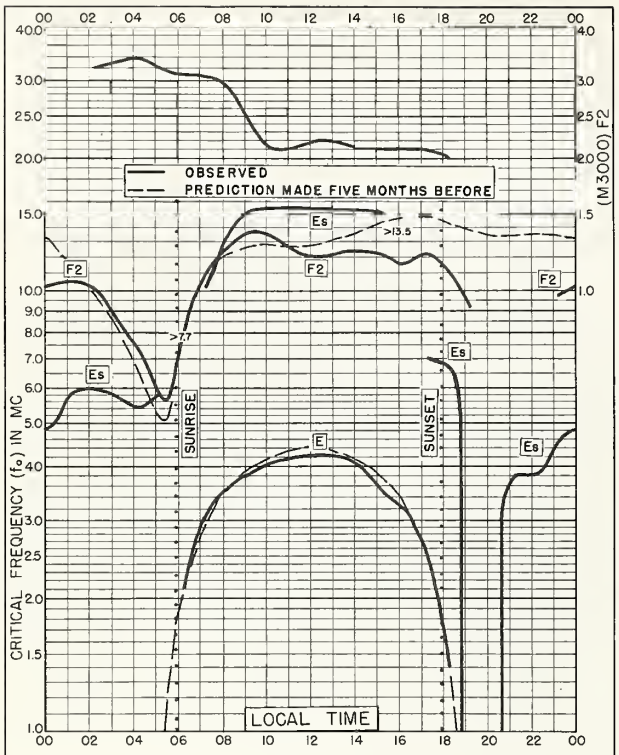


Fig. 116. IBADAN, NIGERIA
7.4°N, 4.0°E SEPTEMBER 1956

NBS 503

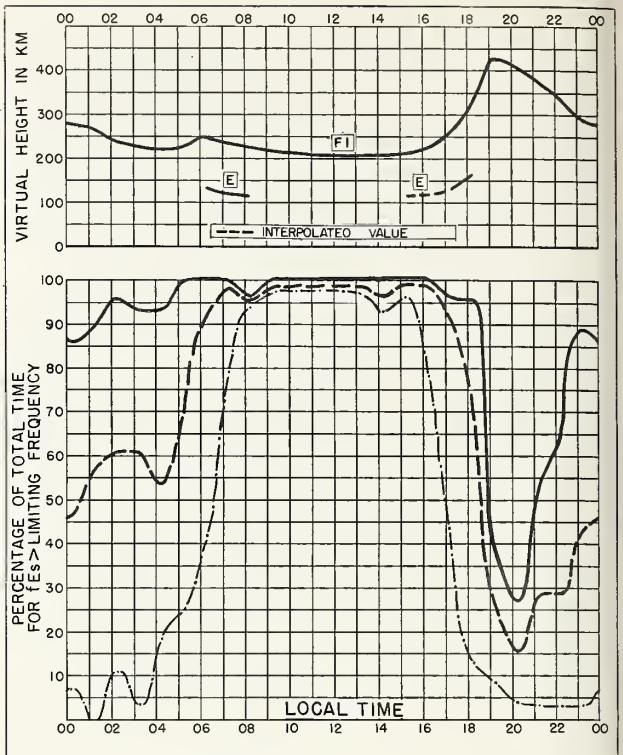


Fig. 117. IBADAN, NIGERIA SEPTEMBER 1956

NBS 490

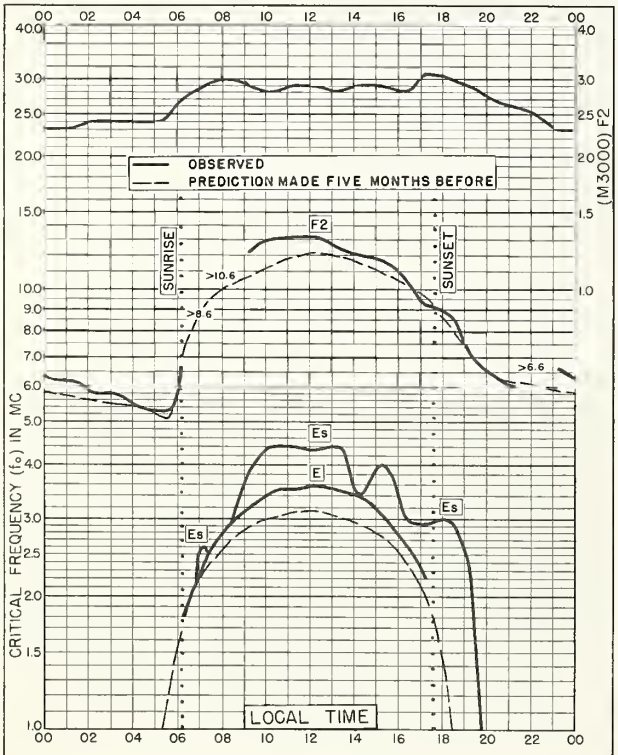


Fig. 118. FALKLAND IS.
51.7°S, 57.8°W SEPTEMBER 1956

NBS 503

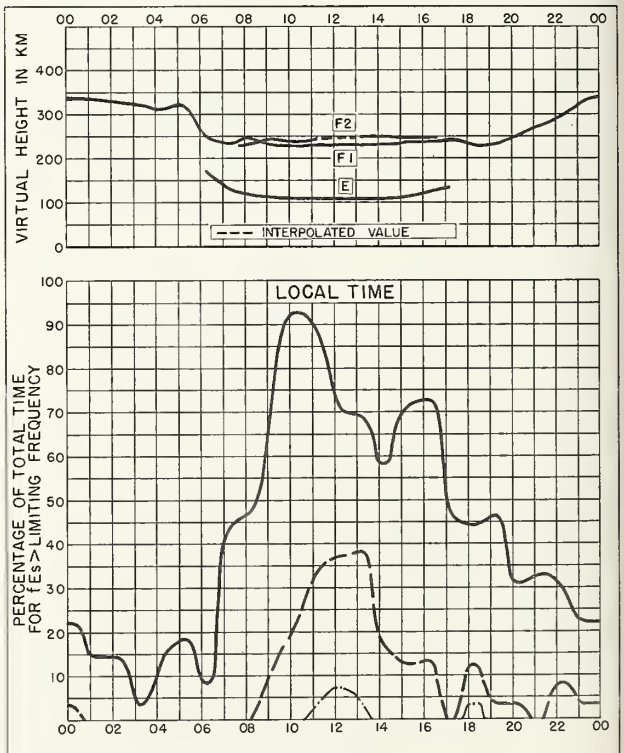


Fig. 119. FALKLAND IS. SEPTEMBER 1956

NBS 490

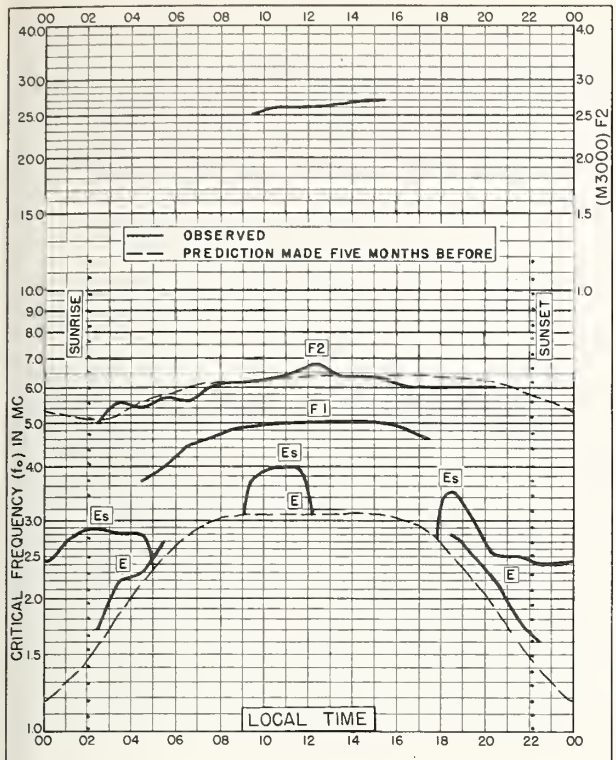


Fig. 120. LULEA, SWEDEN
65.6°N, 22.1°E JULY 1956

NBS 503

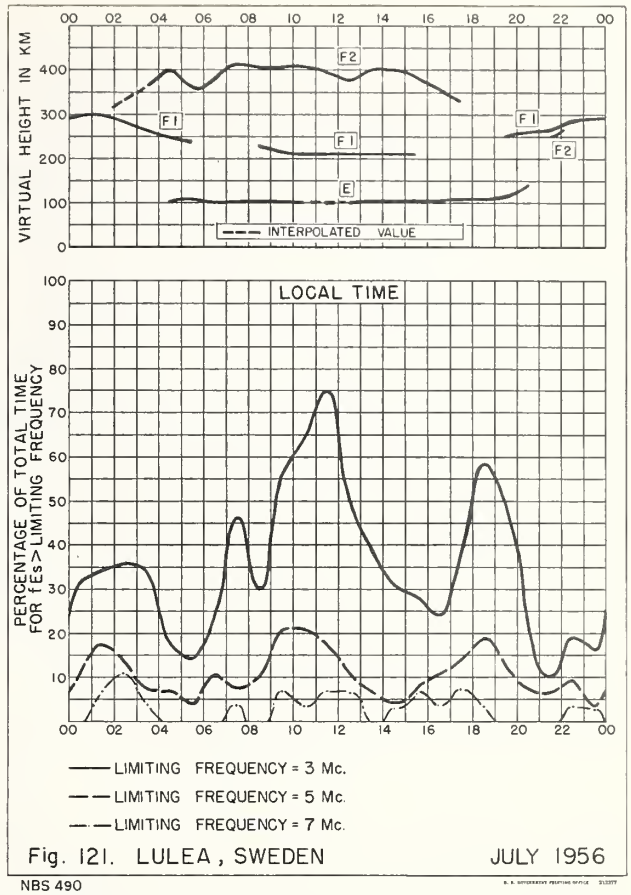


Fig. 121. LULEA, SWEDEN JULY 1956

NBS 490

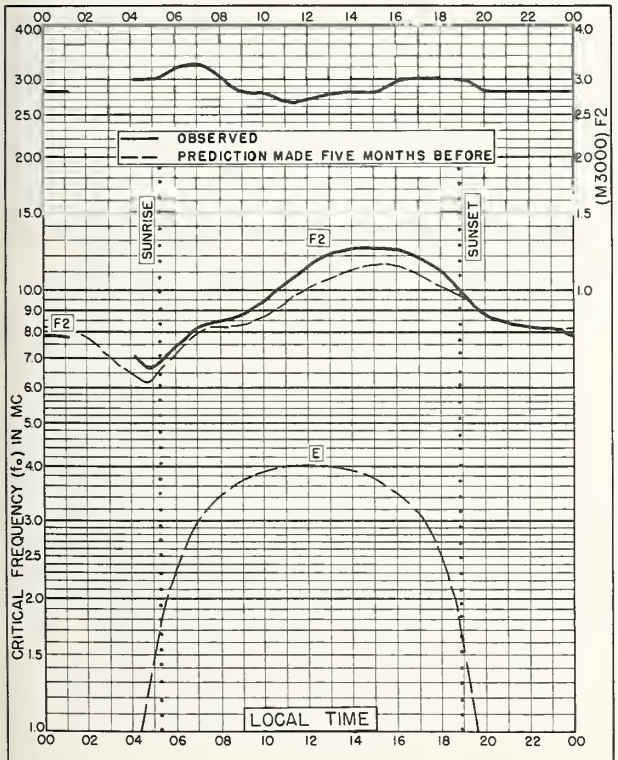


Fig. 122. DELHI, INDIA
28.6°N, 77.1°E JULY 1956

NBS 503

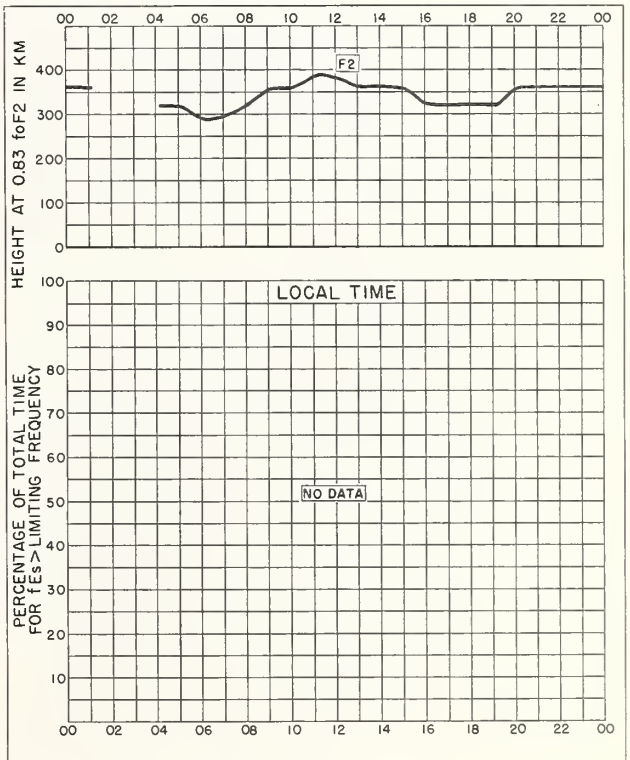


Fig. 123. DELHI, INDIA JULY 1956

NBS 490

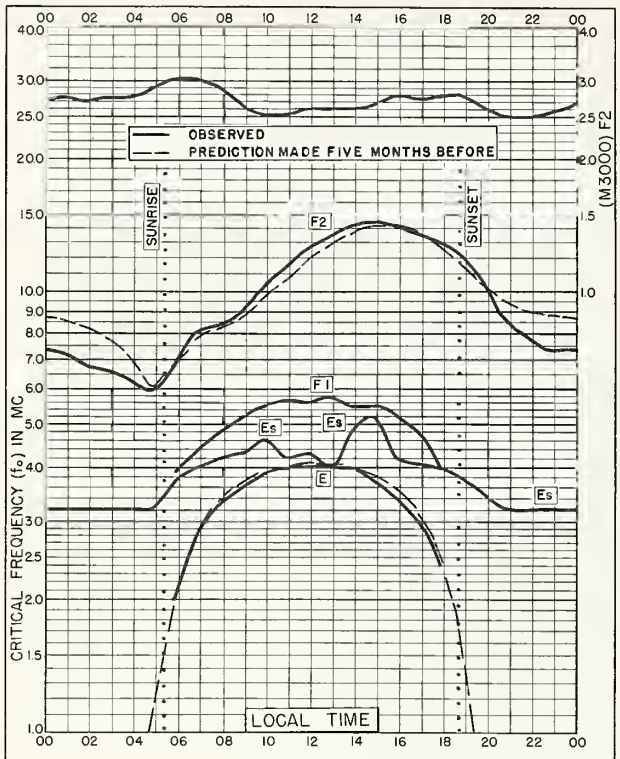


Fig. 124. AHMEDABAD, INDIA
23.0°N, 72.6°E JULY 1956

NBS 503

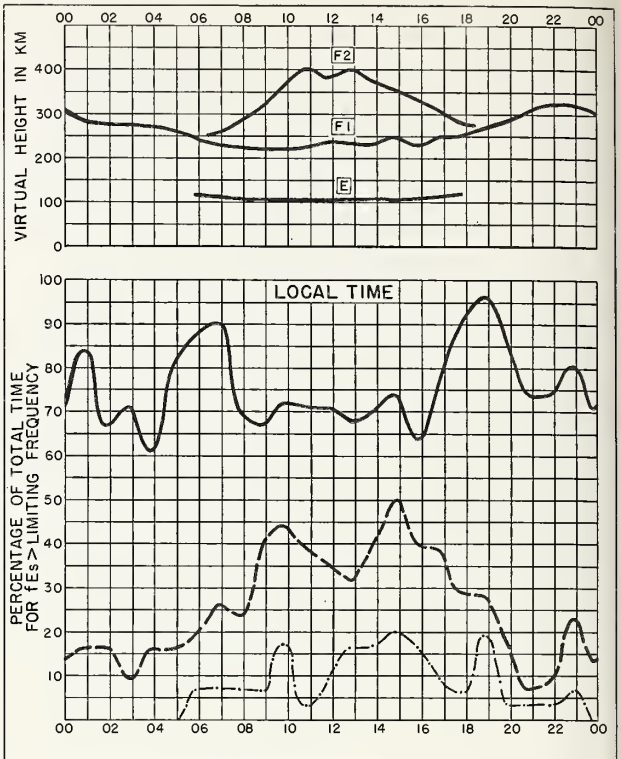


Fig. 125. AHMEDABAD, INDIA JULY 1956

NBS 490

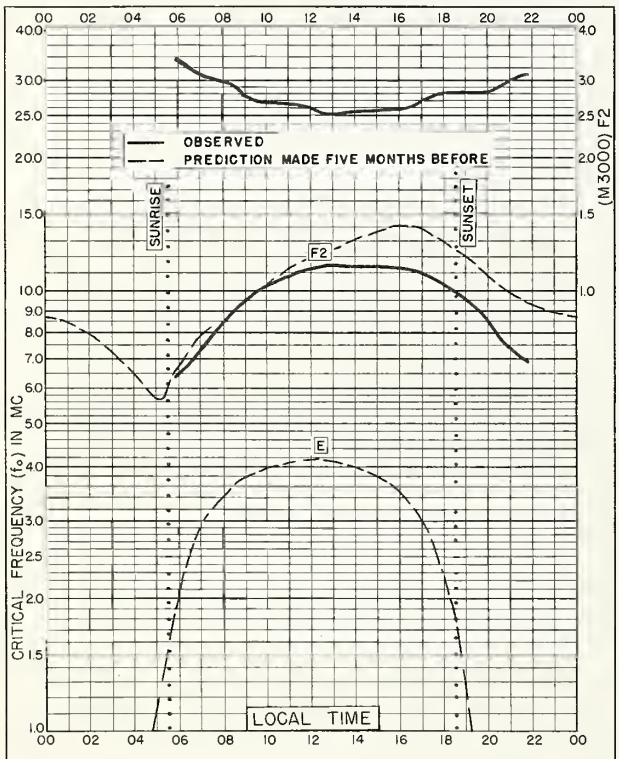


Fig. 126. BOMBAY, INDIA
19.0°N, 73.0°E JULY 1956

NBS 503

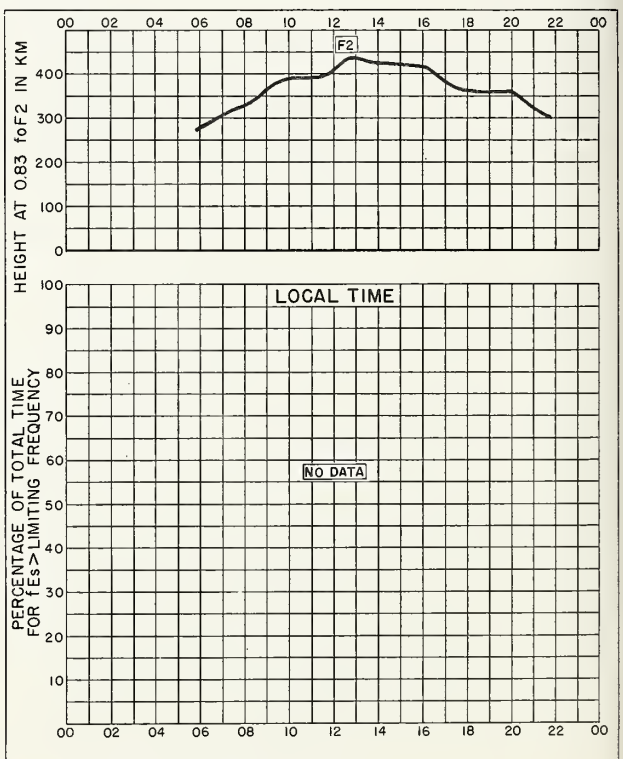


Fig. 127. BOMBAY, INDIA JULY 1956

NBS 490

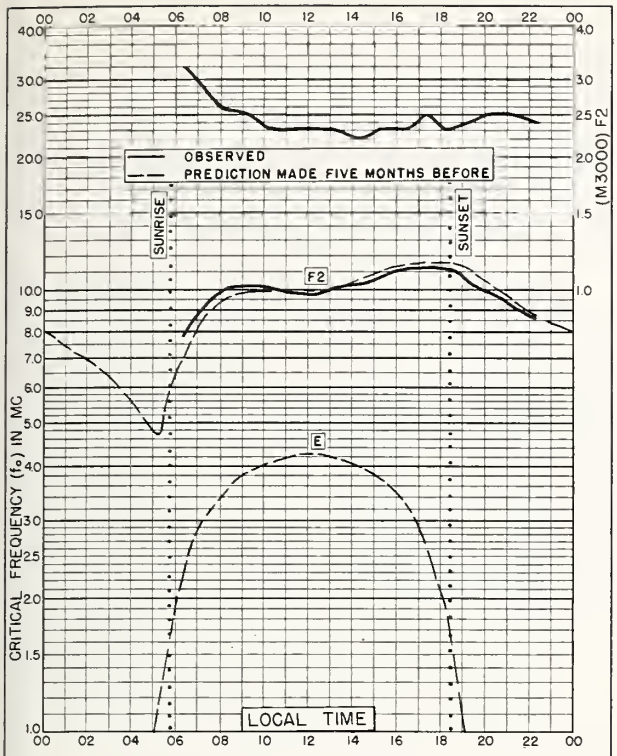


Fig. 128. MADRAS, INDIA
13.0°N, 80.2°E JULY 1956

NBS 503

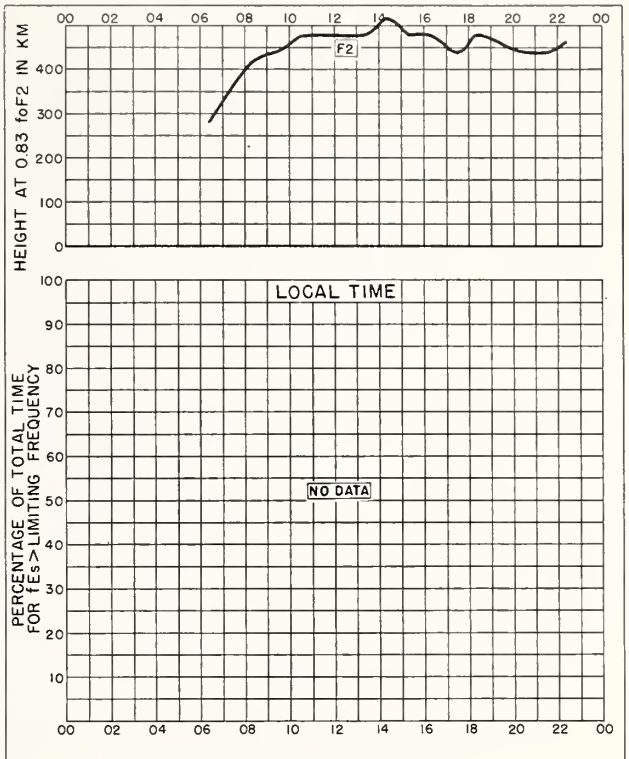


Fig. 129. MADRAS, INDIA JULY 1956

NBS 490

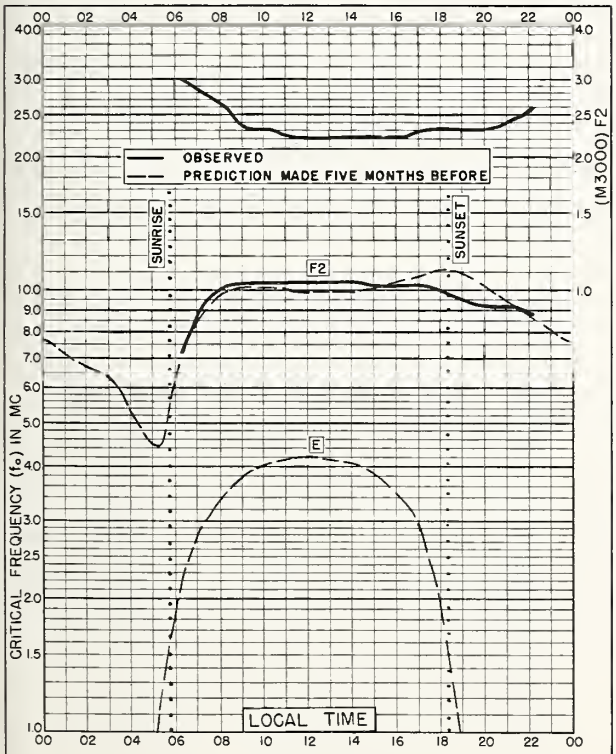


Fig. 130. TIRUCHY, INDIA
10.8°N, 78.8°E JULY 1956

NBS 503

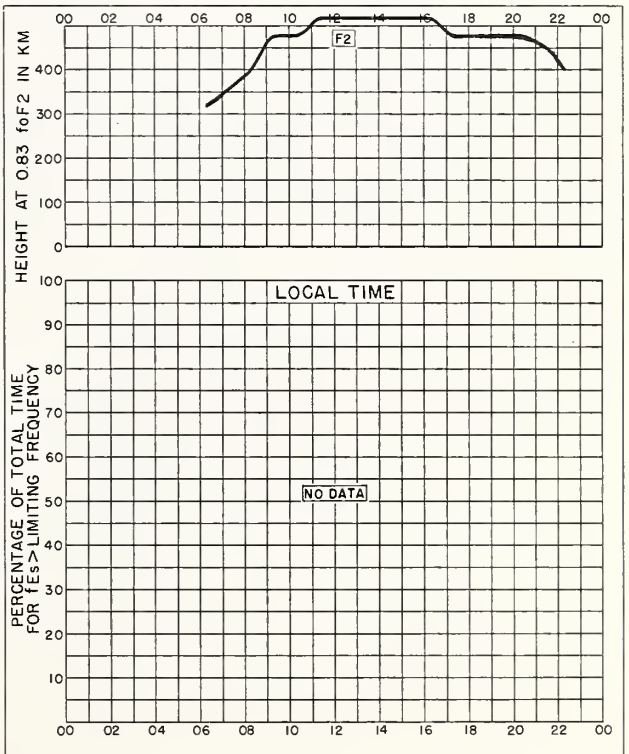


Fig. 131. TIRUCHY, INDIA JULY 1956

NBS 490

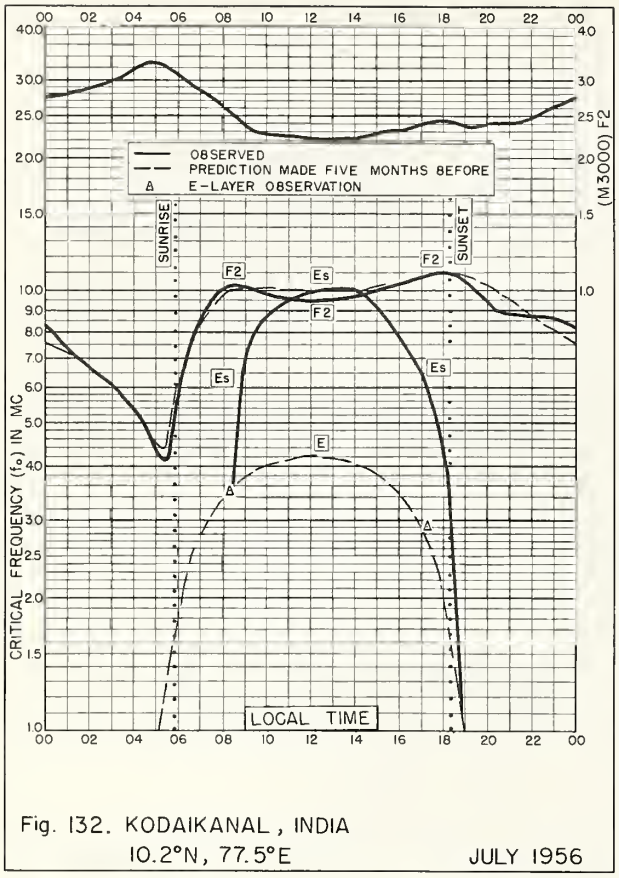


Fig. 132. KODAIKANAL, INDIA
10.2°N, 77.5°E JULY 1956

NBS 503

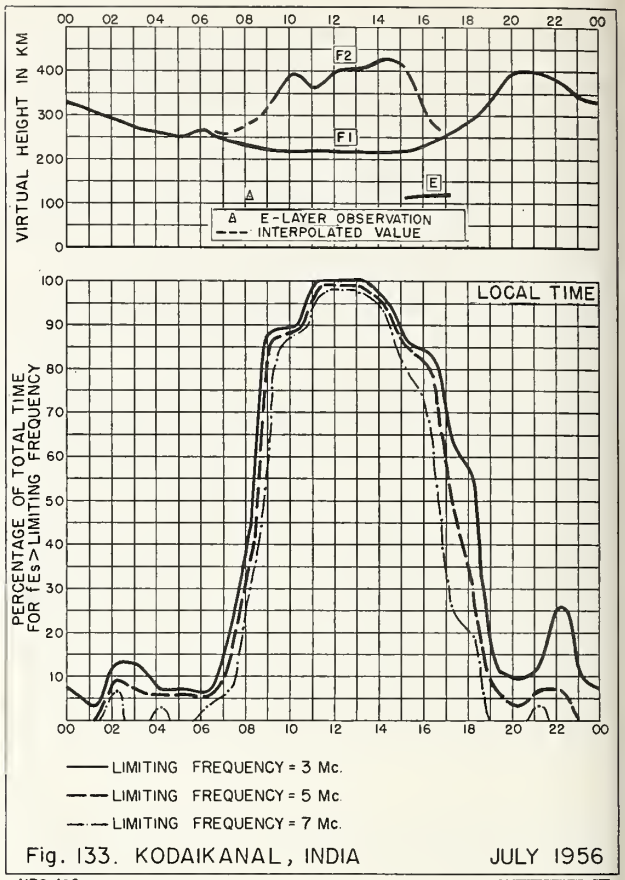


Fig. 133. KODAIKANAL, INDIA JULY 1956

NBS 490

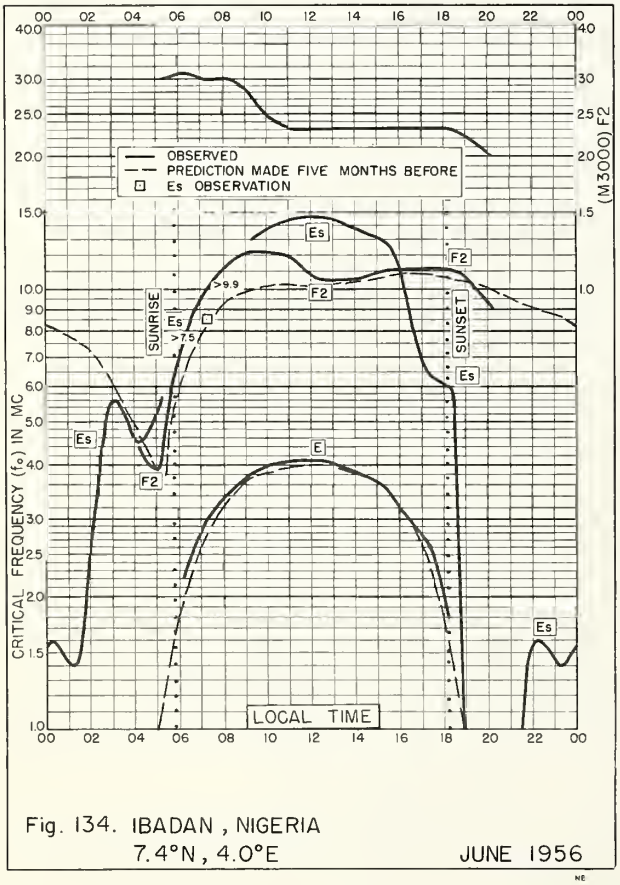


Fig. 134. IBADAN, NIGERIA
7.4°N, 4.0°E JUNE 1956

NE

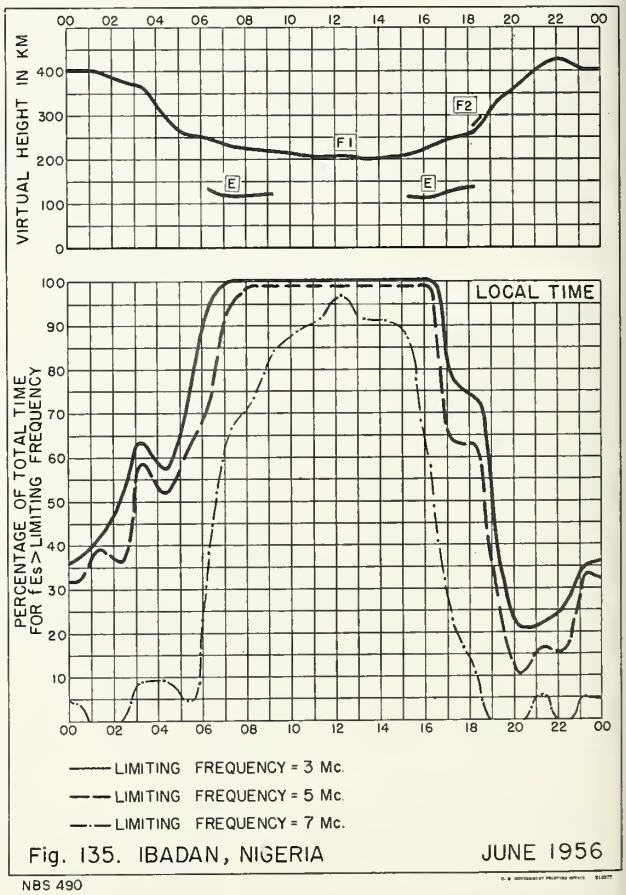


Fig. 135. IBADAN, NIGERIA JUNE 1956

NBS 490

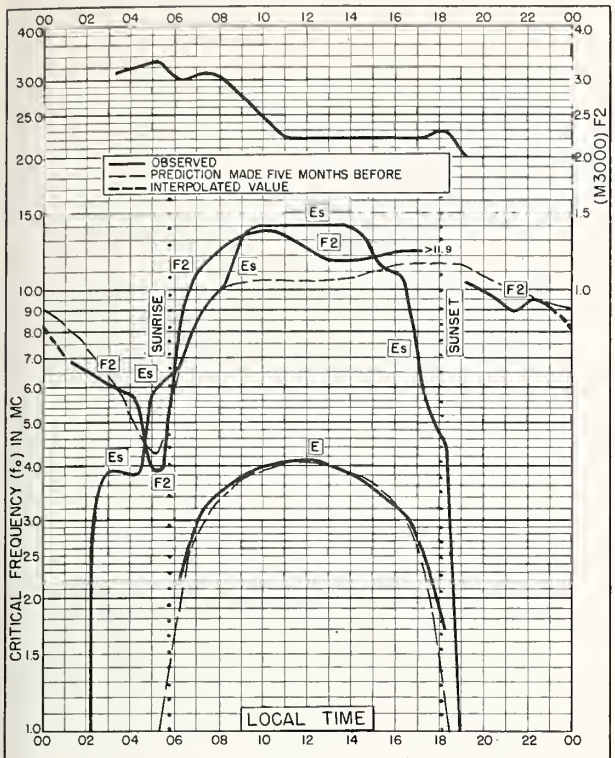


Fig. 136. IBADAN, NIGERIA
7.4°N, 4.0°E MAY 1956

NBS 503

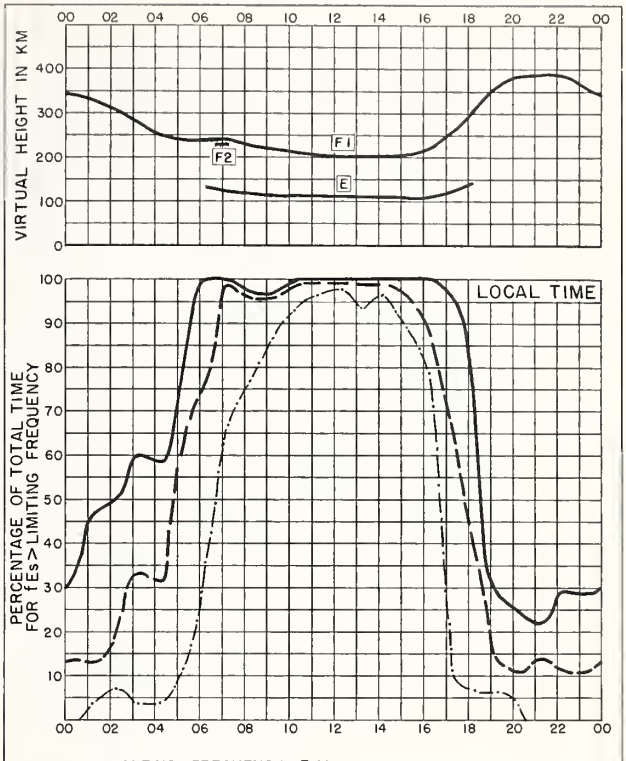


Fig. 137. IBADAN, NIGERIA MAY 1956

NBS 490

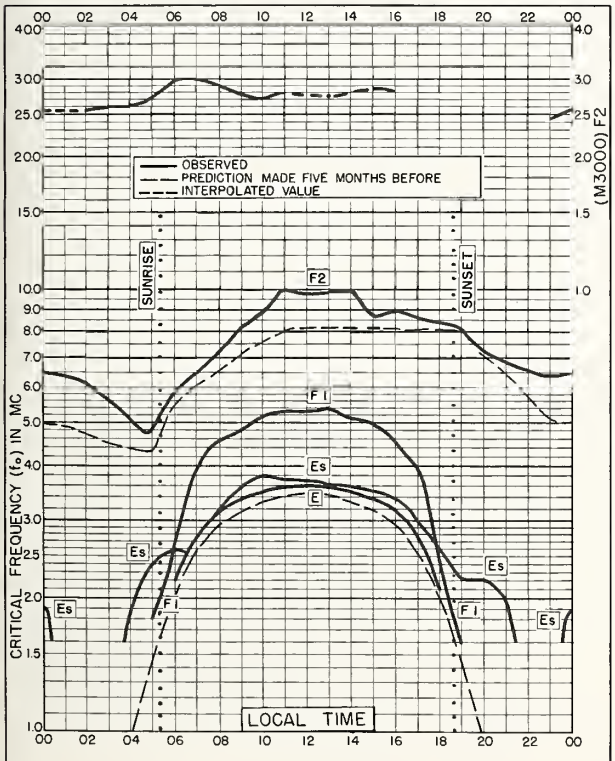


Fig. 138. POITIERS, FRANCE
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NBS 503

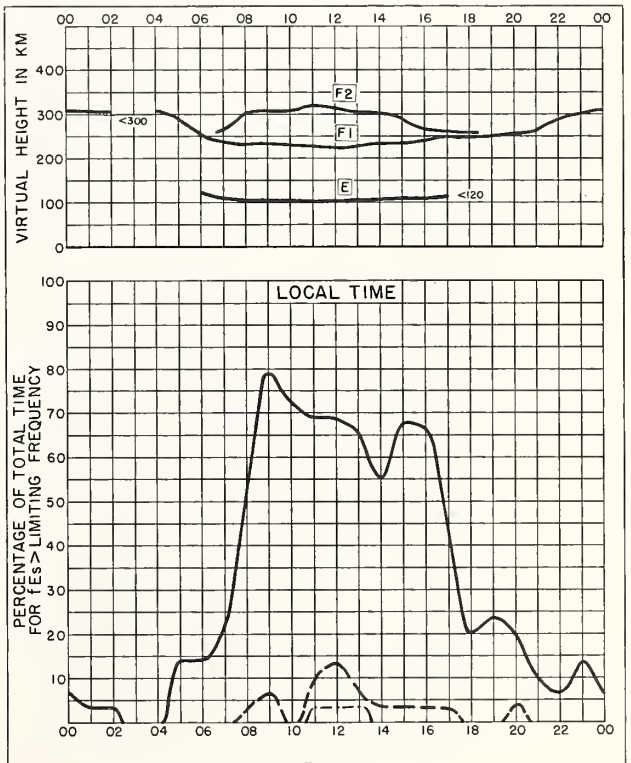


Fig. 139. POITIERS, FRANCE APRIL 1956

NBS 490

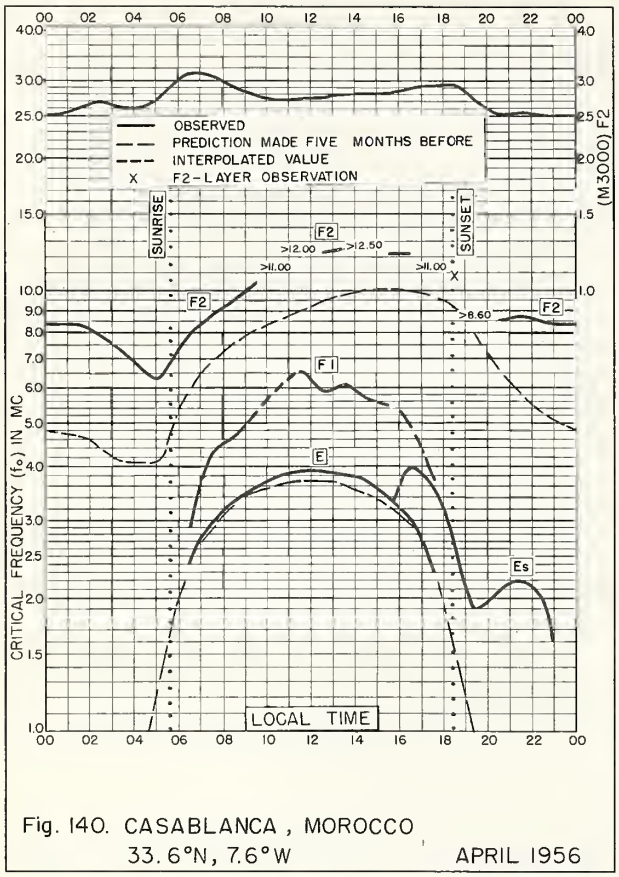


Fig. 140. CASABLANCA, MOROCCO
33.6°N, 7.6°W APRIL 1956

NBS 503

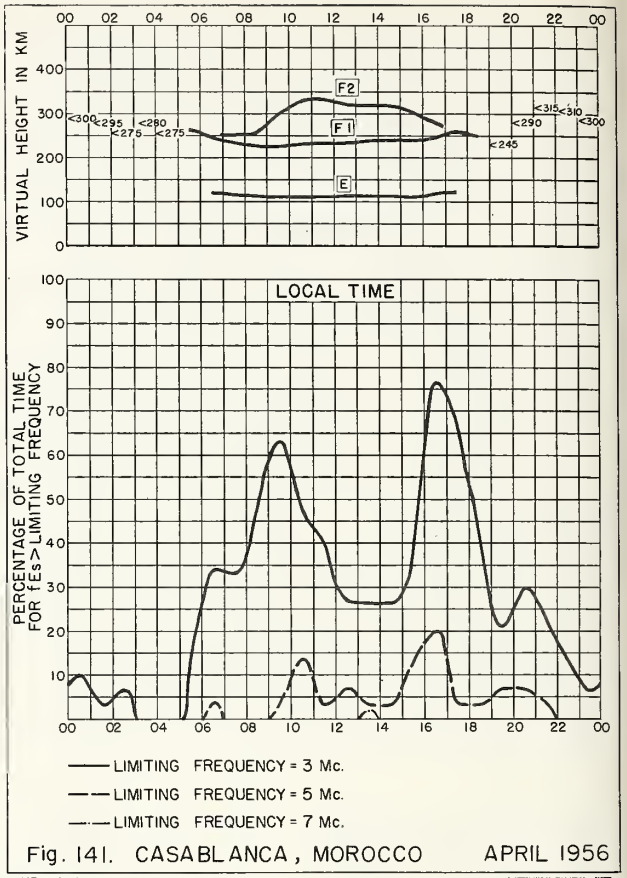


Fig. 141. CASABLANCA, MOROCCO APRIL 1956

NBS 490

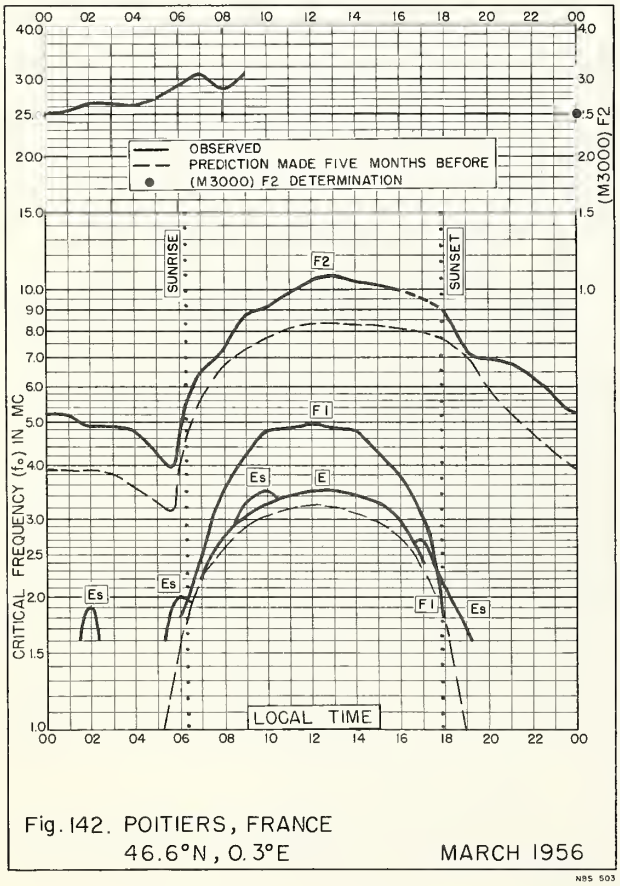
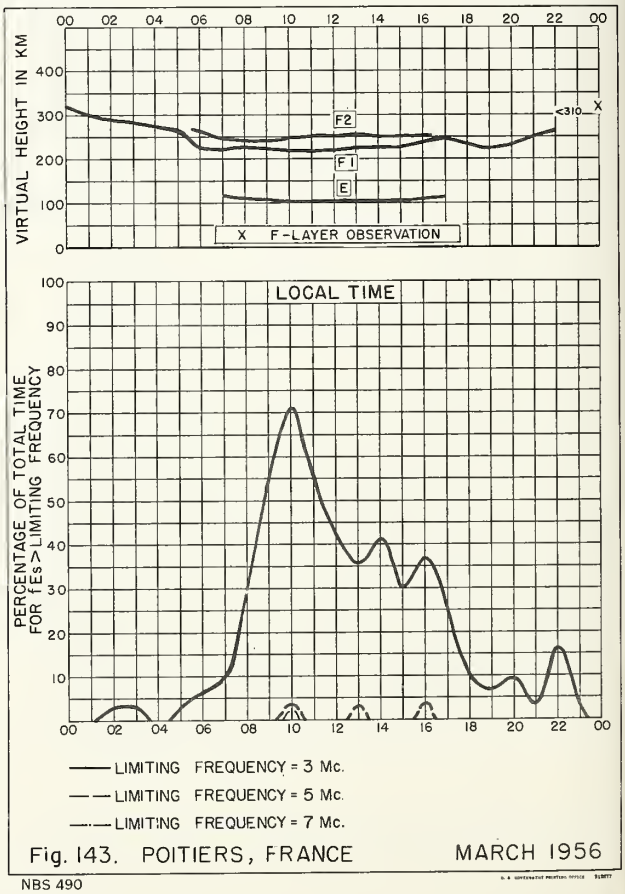


Fig. 142. POITIERS, FRANCE
46.6°N, 0.3°E MARCH 1956

NBS 503



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Index (CRPL-F157 (Part A), concluded)

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